MAY 1998

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GARY & DAWN
GIBSON

May 2, 1996

Dear Home Depot—

Having all the answers about home improvement is one thing — but who would've thought we'd ever come to you for wedding advice.

Let me explain.

We wanted to build a deck at our new lake house so we could get married there. Thanks to your employee John Norland, we pulled it off. From suggesting the right wood, to recommending a speed square that saved us time and money, John was great.

We literally drove the last nail hours before the wedding and everything went off without a hitch (sorry). The deck looks terrific, and John's advice made all the difference. Next to the minister, he was the one person we couldn't have gotten married without.

Sincerely,

Dawn Gibson

PS Pictures are enclosed.

RECEIVED
MAY 6 1996

project sketches

½ 2ans

The finished deck

A flower the wedding

The "BIG" day

the suite

Progress

Inspiration

SMINK-GIBSON WED AT LAKE CYPRESS SPRINGS

Mt Vernon TX—The former Ms. Dawn Smink and Gary Gibson were [illegible] Saturday March 23, 1996 outdoors [illegible] side of their soon to be complete [illegible] lake home located on Lake Cypress Springs near Mt. Vernon, Texas.

The couple invited 100 friends and family members over for an afternoon of boating skiing fishing and swimming. [illegible] treated everyone with an impromptu

[illegible] tony was Justice [illegible] of his wife, Myrn[illegible]

[illegible] r of Mr and Mrs [illegible]ins, Texas. She is [illegible]ant Hotel. Mr Gib[illegible]n Richards Group [illegible]y located in Dallas [illegible]d by Sandman's Bar

CLINIC DAY

YOU CAN INSTALL A SUSPENDED CEILING	EVERY MONDAY
YOU CAN BUILD A DECK	EVERY TUESDAY
YOU CAN REPLACE A FAUCET	EVERY THURSDAY 7 PM
YOU CAN PAINT YOUR INTERIOR	EVERY FRI 7 PM

THE HOME DEPOT

CUSTOMER NAME: Dawn & Gary Gibson
LOCATION: Mt Vernon, TX PROJECT: deck
EMPLOYEE NAME: John Norland STORE #: 0550
DATE: 5/14/96 ARCHIVE NO: 96-3247

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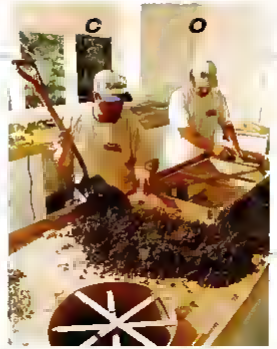

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Kitchen and Bath Special

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By Jack McClintock

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Growing a lawn to greatness doesn't require mundating it with pesticides and synthetic fertilizers. Nurtured with nature's help, grass can thrive—and the dog can roll around on it without getting sick
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An American Craftsman 132
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By Walt Harrington

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A young couple—with the help of the crew of This Old House*—discover the secret to nirvana in San Francisco by turning their basement into a much coveted two-car garage*
By Jack McClintock

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By Stephen Harrigan

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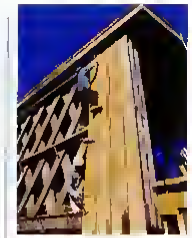
Polyvinyl chloride—a plastic that's light, cheap and strong—has proved the greatest boon to plumbing since the Egyptians first laid copper pipes. Come to think of it, PVC may even outlast the pyramids
By Peter Jensen



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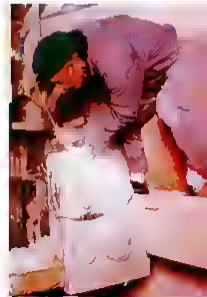

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PHOTOGRAPHS, TOP TO BOTTOM: DANNY TURNER; MIKE MARTL; MICHAEL GRUMM; CHRISTINE ALMEIDA

COVER PHOTOGRAPH BY CRISTIANA CIPPAL. THIS OLD HOUSE KEIT STEVE THOMAS FERTILIZES A LAWN NEAR SAN FRANCISCO WITH MELOROOM COMPOST MADE OF BARLEY AND HAY. SEE STORY ON P. 124.

(Continued on page 10)

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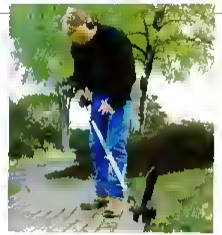

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PHOTOGRAPHS CLOCKWISE FROM TOP: JOHN MCMURTRY; DAVID ALBANESE; MICHAEL GINSKA.

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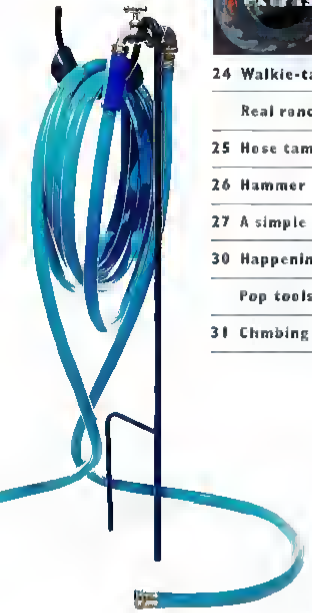

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GREAT. WE LEAVE THE GAS GRILL ALONE WITH THE CHARCOAL GRILL AND LOOK WHAT HAPPENS.

and place the meat directly over a drip pan. The Char-Baskets are designed to hold the exact amount of charcoal you need. So there's [illegible]ork. You get perfect prime rib, chicken and turkey. It's that easy.

While the Performer's mom and dad are great cooks, it also comes from some very sturdy stock. So it should come as no surprise that the way the Performer is put together sets it apart. Every Performer Grill features a rough-about welded cart made of heavy walled steel tubing. And like all Weber Grills, the Performer is made of special grade steel with porcelain enamel that really holds up to the elements. It won't ever rust, fade or peel.

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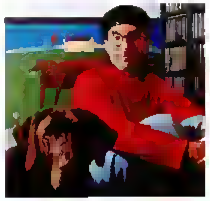
weber

Even after **WENDY MARSTON** finished her story on bagged concrete mix ("Stone in a Sack," p. 45), the subject matter continued to consume her thoughts. "I became one of those people who loitered around construction sites—just to see whether the workers used bagged concrete," she says. On a vacation to Playa del Carmen, Mexico, Marston recalls, "My friends were saying, 'Ooh, look at the beach,' and I was saying, 'Ooh, look at all the new construction.' It was a concrete extravaganza down there." Marston has also written for *Sciences*, *Outside* and *New York* magazines.

"It had a strange center of gravity," **KIT LATHAM**, who photographed "Bocce Bella" (p. 138), says of his first impression of a teal bocce ball. "It thumped when I threw it against the sand. There's nothing like it. It's almost sexual." Outdoor recreation at Latham's weekend cottage in Copake Falls, New York, however, stems from a garden rather than a bocce court. He and his fiancée, writer Margaret Roach, raise unusual vegetables such as orange sun-gold and black tomatoes. The couple also collaborated on *A Way to Garden: A Hands On Primer for Every Season*, published in February by Clarkson Potter. Latham's work has appeared in *Garden Design*, *Martha Stewart Living* and *American Homestyle & Gardening* magazines.

To **PENNY MOSES**, the writer of "Can a Dishwasher Be Worth $1,000?" (p. 83), the automatic dishwasher is a quality-of-life necessity on a par with the telephone. Growing up with a younger sister on a farm in Shabbona, Illinois, she says, "I *was* the dishwasher." Now she lives in Washington, D.C., with her husband, four dogs and a cat as well as with constantly visiting friends who "have never rinsed and reused a glass in their lives." Moser, who often runs her beloved dishwasher twice a day, has written for magazines including *Sports Illustrated*, *Fortune*, *Life*, *Discover* and *Men's Journal*.



Illustrating "The Best Lawn" (p. 124) is **MARK ULRIKSEN**'s first assignment for *This Old House* although he has felt a personal connection to the TV show for years. During a particularly inconvenient renovation project at Ulriksen's Victorian house in San Francisco, watching host Steve Thomas and master carpenter Norm Abram gave him a feeling of comradeship. "My wife was pregnant, and we already had a 4-year-old," Ulriksen says. "When Lily came along, we were still living out of three rooms on the second floor." Post-remodeling, Ulriksen works in his at-home drawing studio. His other clients include the *New Yorker*, *GQ* and *Atlantic Monthly*.

HELP

LETTERS TO THE EDITOR
Got a problem? We can help. Got a gripe? We're listening. Have a happy experience with a supplier or manufacturer? Contact us via E-mail at Letters@toh.timeinc.com or write to: Letters, *This Old House* magazine, 1185 Avenue of the Americas, New York, NY 10036. Please include your phone number.

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Better Sopping Than Sorry

Being a retired firefighter, I cannot agree more with *This Old House*'s January/February 1998 article "Fire Sprinklers for Your Home." Nothing is as final as fire. When you compare a water-soaked room with the alternative, you'll understand that a home sprinkler system is important.

JIM FAIRBANK, *Kennewick, Wash.*

Fire protection should be considered a utility just like domestic water, electricity and heating. The partial sprinkler systems Tom Silva has installed with heads only in "hot spots" would not have saved the Mizioch family home from the fire that started in a bedroom.

TED SWEENEY, *Orlando, Fla.*

Dream Dissenters

Thank you for "Norm's Shop of Dreams" [November/December 1997], an excellent plan of how not to build a workshop. Apparently, even at almost $50 a square foot, building the perfect shop is difficult. Moving large tools in order to use them is time-consuming and potentially dangerous. They are called stationary tools for a reason. A concrete slab floor is ridiculous. A wood shop must have a wood floor, which is less of a strain on the feet and legs. And opening a door in the middle of a Massachusetts winter to make a cut is unthinkable.

W. DAVID ALLEN, *Rising Fawn, Ga.*

I have been a reader of your magazine from the very first issue and have always been impressed with the articles and content, but I was more than disappointed with Norm's dream workshop for the Milton project. I liked the heat system in the floor and open construction without posts. However, having given seminars on shop planning and design, I could not believe the layout that was chosen. The placement of the stationary tools defeats the flow of materials through the shop. A proper layout requires moving materials as little as possible and establishing a sequence of equipment that culminates with a final assembly and finish area. The dream workshop layout requires moving material from one end of the shop to the other and then back again. The jointer, table saw and planer should be located close to the wood storage area near the entrance. I would have switched the locations of the lathe and chop saw because placing the chop saw in the middle of the shorter back wall halves the length of materials that can be easily cut.

TIMOTHY A. TIMM, *Laporte, Ind.*

Norm Abram replies: From the beginning, it was a given that the Milton workshop would be limited in size. Out of respect for the property's history, we made the shop fit into the rectangular footprint of the ell that formerly occupied the spot. But no matter what size the shop, we would still have arranged the tools the same way—just like the layout used on *The New Yankee Workshop*. In both cases, we gave priority to the proximity of the jointer and table saw, a woodworker goes back and forth between those two tools for nearly every project. As for the chop saw, if we had placed it near one of the long sidewalls, it would have cramped traffic around the table saw. Likewise, if we had placed tools on the materials end of the room, they would have trapped completed projects in the workshop. And while it's true the workshop occupant may occasionally have to open the doors to make a cut at the band saw, the energy efficiency of the workshop will make for only a slight effect on utility bills.

And on the subject of cost effectiveness, as much as we like the comfort of wood flooring, it would have meant buying treated framing and decking materials and building a properly vented crawl space—time-consuming and way over budget. The concrete we chose is economical and comfortable enough for an amateur woodworker, who doesn't need permission from the boss to take a break. Finally, keep in mind that we designed the room as a hobbyist's workshop—rather than a commercial one. Nonetheless, we used the workshop to build floor-to-ceiling media room cabinets for the Milton dream house—with no real obstacles.

PHOTOGRAPH BY BILL WHITE

PHOTOGRAPH BY STEPHANIE MASSEI

See This Old House

When I was on Nantucket in October, I was excited to see the outside of the Mill Street house renovated on the television show. I think it would be super if readers and viewers of *This Old House* could actually walk through a completed project. Why not open the house in Milton to the public for tours?

LEANE SCHULTZ, *Buffalo, N.Y.*

This Old House can offer tours of the Milton house because—unlike our other projects—it has no owners to inconvenience. Tickets for the *This Old House* Milton Show Tour taking place May 22 to June 28 are available through Ticket Master. (Call your regional outlet, or visit the Web site www.ticketmaster.com.) General admission is $19 for WGBH members and seniors, $22 for adult nonmembers and $10 for children under 12. Adult admission includes a copy of the special Milton dream house issue of *This Old House*, sold only at newsstands.

Tibetan Mystery

In "Plaster Master" [November/December 1997], there is a picture of Lorna Kollmeyer's dog identified as a Tibetan mastiff. Isn't the dog in the picture a Gordon setter?

CHARLES A. WILSON, *Skandia, Mich.*

"Judging from the penciling on the paws, droop of the lip, general head size and coat, Bosco is not a Gordon setter," says American Tibetan Mastiff Association president Richard Lewis. Kollmeyer, too, maintains that her pet is a purebred Tibetan mastiff.

punch list

definition. *a list of items incorrectly done or remaining to be finished on a construction job*

- In "Yankee Ingenuity" in the January/February 1998 issue, we incorrectly identified the source of the clog-free gutters used on the Milton roof. Call Chip Newmon at Minuteman Seamless Gutters Inc. at 617-469-2709 for more information on the Englert Leafguard Gutter System.

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OFF THE WALL

BY JEANNE MARIE LASKAS

PULLING TOGETHER

The secret to a weed-free yard is a little collective oomph and a lot of beer

A few years ago, I went to an Amish barn raising. This was an uplifting experience that changed my home remodeling life forever. Never again would I think of a project without also thinking of all the friends who could enhance the experience by, well, helping.

The barn raising was in the Kishacoquillas Valley in central Pennsylvania. Sam Z. Yoder, an Amish bishop, had lost his barn to a fire. As is the tradition, neighbors arrived to build him a new barn. Hundreds of neighbors, each wearing a straw hat, showed up at daybreak and instinctively formed teams, some men hoisting beams, others banging pegs into holes, the nimble ones climbing all over the sides and the roof like ants. The women cooked mounds and mounds of high-fat foods. Sam Z.'s barn was finished by the time his kids came running up the lane from school.

It was a sight to behold, all that collective oomph. It made you want to jump in and help, become part of the greater good. I stood there munching my fourth whoopie pie, a kind of Amish chocolate Twinkie, and wondered how I might sign up to be an Amish person. Then I remembered that the Amish don't use power tools—this whole barn had

ILLUSTRATION BY MARC ROSENTHAL

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gone up in one day, without a single electric saw I started getting nostalgic for my cordless screwdriver, so I didn't want to be Amish anymore.

But clearly there was something I wanted to take home from this experience. Perhaps it was the sense of community. The feeling of togetherness. The warm glow of gratitude that comes when friends arrive to lend a hand.

I thought of my friends—and all those hands attached to them. Suddenly, I imagined all those hands wearing gardening gloves. I imagined what all those hands in all those gardening gloves could do for my yard.

At that time, my yard happened to be experiencing a huge and terrible landscape emergency. I'd just installed a picket fence to reclaim my property line. The band between my old yard and my new yard was about 10 feet—of weeds. Not just any weeds. These were decades-old weeds, junky trees tangled up in thick vines with a few layers of nasty briars. It was as if Mother Nature's evil twin was taking over the world, and she was starting with my yard.

In my yard I felt surrounded. Powerless and puny. But after the barn raising, I knew what to do.

Have a Weed Pull.

Friends could arrive at daybreak and instinctively form teams. Some could pull weeds with their hands, and others could dig weeds with shovels, and others could stay in the kitchen and work on a high-fat feast. Afterward, we could admire the yard and marvel at our collective oomph.

I put together the guest list. I noted a slight change in the way I regarded my friendships. My closest friends were suddenly those with muscles and endurance, people with gardening tools, people who could cook. I invited Karen, a friend who had grown up in an Amish area, specifically because she had an actual recipe for whoopie pies. I sent out the invitations, promising a free pair of gardening gloves to anyone who showed up. I felt good about the plan. I felt righteous. I felt like a spiritual leader bringing the customs of the Amish to my people.

Only in my most private moments did I feel like a needy, plotting manipulator, like I was attempting to turn my pool of dear friends into a source of cheap labor.

About 25 people showed up for the weed pull. "Hello! Hello!" I said, all cheery, not wanting to depress anybody with the sheer amount of work ahead. I threw some burgers on the grill and passed out the gardening gloves.

I noticed how different my friends were from the Amish. Number one, they drank a lot of beer. Number two, their worker-bee instincts were decidedly dull. Number three, they played volleyball.

"You guys," I said. "Um, wouldn't you like to play volleyball after we pull the weeds? This is a weed pull, after all. *heh heh.*" They looked at me. It was, they said, 10 to 9 in the fourth game of a best-of-five series.

It went on like this. The next time I whined, it was 9 to 8 in the 10th game of the same series. People went out for more beer.

The weed pull was turning into a roaring success for everyone except me and my yard.

I sat under a tree, looked at the weeds and got ready to surrender. The ball went soaring out of bounds and landed in the briars that we were supposed to have already pulled. Amy, one of my more boisterous friends (and near the top of the list for muscles too), went in after it. Michael, an athletic sort who had a crush on Amy, followed.

"Ouch, *yee ow,*" Amy said, getting scratched by the briars.

"Hey, weren't we supposed to be pulling these weeds?" Michael said.

And I guess they had some moment of reckoning, because everybody looked at me—and the way I was sulking—and soon turned to the task.

By nightfall, the bulk of the weeds were pulled. I made coffee, and Karen passed out the whoopie pies. The sugar in the whoopie pies, combined with all the sun we had got, combined with the beer, combined with the sore muscles that accompany any day of intense gardening, knocked my friends out. It was the first party I'd ever thrown that ended with naps. It was a strange sight, all those friends strewn about my yard, snoozing, their knees dirty and their arms and legs scratched up. My friends looked like soldiers after battle.

"Uh sorry, guys," I said, passing out bandages as they awoke, gathered their things and left. I felt sorry for trying to inflict Amish values on my regular old mainstream non-Amish friends.

I figured the weed pull was an official bust, and I vowed just to hire landscapers next time.

A few days later, Beth called. She called to say she'd had a good time at the weed pull.

"You did?"

"Sure," she said. And then she told me she had an idea. She said she was thinking of having a Tree Plant.

"A what?"

"I could have everyone over, and we could plant trees," she said. She asked me what I thought about a birch in her side yard, maybe a magnolia out back.

She wasn't the only one. Since my weed pull, I have attended a friend's Cement Four (we put in a lovely patio), a Brick Point (we repointed two chimneys) and a Driveway Pothole Fill and Reseal, which my friend Todd called the First Annual Driveway Pothole Fill and Reseal, but I'm telling you there is no way we're doing that stinky job again. At least we say so now.

But when he calls, we'll be there. And when another friend calls with another project, we'll be there for that one too. Because we're getting good at this. Because the ritual is by now set deeply in place.

Because collective oomph is not just for the Amish anymore. All you need are some willing friends and a lot of decent beer. ●

Only in my most private moments did I feel needy, like I was attempting to turn my pool of dear friends into a source of cheap labor.

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m/98 (extras)

You Walkie, I Talkie

Little Worm, this is Raving Falcon on the roof. Can you read me?" Loud and clear. The ultra-high-frequency (UHF) two-way radios penetrate walls and mazes of halls within a 2-mile radius, broadcasting on 14 channels that were designated as Family Radio Service by the Federal Communications Commission in 1996. For home-improvement operatives, new FRS walkie-talkies can transmit orders issued from, say, a media room to a rooftop commando aiming a satellite dish. Access to family radio airwaves costs nothing and requires no license, which means unfortunately that anyone with a scanner can eavesdrop on a conversation. However, FRS walkie-talkies incorporate an anti-interference technology known as specific squelch, which at least keeps those apies—as well as any garbage noise—from butting in.

The Lived-In Look

After scouting 100 locations in Montana to serve as the Double Divide Ranch in the movie *The Horse Whisperer*, production designer Jon Hutman realized he'd never find two houses sitting across a stream from each other as described in the best selling fictional book by Nicholas Evans upon which the movie is based. "The relationship between the two houses is really important," Hutman says. "In one scene, Tom [Robert Redford] is in the bedroom of the white house looking longingly at the homestead cabin because he's fallen in love with Annie [Kristin Scott Thomas], who has moved in there with her traumatized daughter." So to make a log cabin roomy enough for interior camera shots, Hutman cobbled together two smaller cabins and a barn, resulting in a "deep, dark, womblike place of healing and reconnection." For the ranch house, Hutman built a post Victorian mail-order clapboard that bears the evidence—and haphazard remodeling work—of several generations. "The back door, which goes through a mudroom, serves as the main entrance. On a ranch there's nothing but mud, so there's no ceremony, you just drop your muddy boots and enter a big eat-in kitchen. The trick is not getting these places to look perfect but rather to get them to reflect the characters' imperfections."

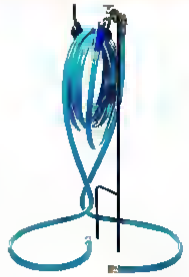
The main house needed to be "historically evocative, if not totally accurate," says Jon Hutman.

Hutman dismantled old buildings log by log to build the creek house. After filming, "everybody wanted to buy this place," he says.

Hose Tamers

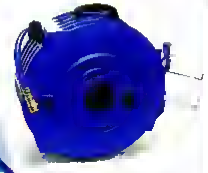
Like a snake in the grass, a forgotten garden hose can run afoul of lawn mowers. It can also kill the very grass it once nurtured and crack after so many sun-drenched summer afternoons. But the alternative doesn't have to be a tangled heap lying near the outdoor faucet. Just provide the water-spewing serpent with a spot in which to curl up inconspicuously. An inverted bishop's crook provides a handy perch. A portable spool makes light work of toting 50 or more feet of hose around the backyard. And a conveniently retractable reel relieves the drudgery of yanking and looping a muddy, slimy hose by hand.

Snake basket: *A 50-foot hose nests inside a Mediterranean-style terra-cotta pot, which has a drain in the bottom so water doesn't collect and stagnate.* RIGHT: **Pushcart:** *A rubber-wheeled reel with a removable hand crank has a sturdy steel frame, rubber feet and an adjustable brake to keep it from sliding*



Saddle: *A brass faucet accents an elegant steel stand that can be planted across the yard from an outdoor spigot*

Hosemobile: *The hose guide on a lightweight plastic rolling reel makes an easy task of rewinding up to 225 feet of hose*



Swiveler: *A wall-mounted reel swivels 180 degrees from side to side, hose retracts with a quick tug*

Pella's Precision Fit replacement windows will make your remodeling project an easy thing to picture.

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(extras)

WEB

The first step to getting more kilowatts for the money is to point and click

www.energystar.gov
Before embarking on a mind boggling hunt for the most environmentally friendly appliance, use this site to comparison shop for energy efficiency. The federal government's Energy Star program lists appliances by brand, capacity and efficiency. Clicking on the washing machine savings calculator reveals that, compared to a conventional top-loading clothes washer, a front-loading Amana can save a household 9,695 gallons of water and 628 kilowatt hours of energy, or $92 in utility bills, a year. Besides giving similar statistics on brand-name refrigerators, dishwashers, air conditioners, television sets and VCRs, the site provides links to sites of participating retailers.

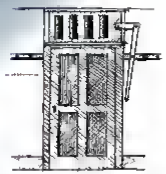
www.geoexchange.org
The Geothermal Heat Pump Consortium explains the mechanics of ingenious technology that draws upon the constant temperature of the earth as a heat source and heat sink for space conditioning—heating, cooling and humidity control. Besides animated graphics and the enlightening "Earth Comfort Update" newsletter, the site contains numerous case studies of buildings gone geothermal: a McDonald's in Detroit, a New Hampshire bed-and-breakfast and a Utah dairy farm, where a geo exchange system keeps the "cows warm, the milk cold and the utility bills down."

Hammer Zen

This homely tool appears an exception to typically sleek Japanese design, but close inspection reveals other virtues. Sharply honed cat's-paw claws, angled to maximize leverage, dig out sunken nail heads. Hardened bull's-eyes on the cheeks allow side hammering in tight spaces. A 13½-inch handle gives extra reach for toenailing and is at a slight angle to the head, so the face—plain or waffled—strikes a nail squarely at the end of a full-arm swing. The comfortable, nonslip rubber grip then absorbs the shock of all that hitting power.

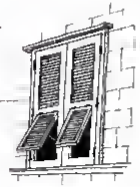
HAMMER AND BIDDIC MEHRMEL, DESIGN. SHELTER SKETCHES – JOHN TAYLOR; PLASTIC SHEETING COURTESY OF ZIPWALL; PAINTING BOOK, COURTESY OF SEARS ROEBUCK; SHINGLER POSTER, SHERI BOB O'CONNELL; SELFIE BOOK, SHERI BOB O'CONNELL

Folk Remedies



Massachusetts Shaker door with lever-operated transom vent

Decorative openings in a blacksmith's shop in Bida, central Nigeria

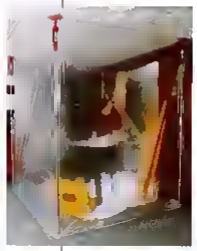


Louvered shutters in Dubrovnik, Croatia.

Nearly two decades ago, John S. Taylor set out to collect the best building tips of all time. With sketchbook in hand, the New Hampshire architect dug through libraries and traveled the world, learning from diverse sources: the Incas, who seem to have tied walls together by pouring molten copper into channels chiseled in building stones; Cameroonian hut builders, who texture exterior walls to be self-shading; Australian compass termites, which orient their 13-foot-tall mounds precisely north-south. Taylor has now published his sketches, brilliantly and sometimes amusingly juxtaposed, as *A Shelter Sketchbook: Timeless Building Solutions*, which he hopes will encourage others to tap into the practical wisdom of folk architecture. "Many of the ideas still apply," Taylor says. "They have a human quality because the people who created them had to be certain that the buildings would meet their needs. We've lost something by focusing too much on style, on what a building says not what it does."

BOOKS

Dust Never Sleeps



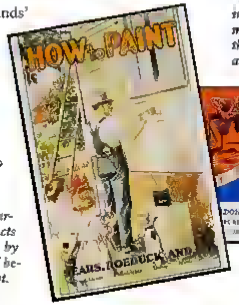
In just a few minutes, four lightweight poles and a little plastic sheeting create the next best thing to a true hermetically sealed work area, so sawdust and plaster dust don't have a chance to infiltrate the rest of the house. To assemble, twist the telescoping poles to height—up to 12 feet—and pump the jacks at the top to pull the plastic sheeting taut between floor and ceiling. One caveat: Be sure to leave an opening for ventilation. Now, if there were only a way to shrink-wrap all of that construction debris....

"Damn, those should shine up just great."
—author-restorer Gregory White Smith on seeing pictures of Titanic's brass fittings lying on the ocean floor

SELF STARTERS

From the "ludicrously thin columns" of a Baghdad opera house to the "spatial richness" of the Usonian houses, *Frank Lloyd Wright* takes the reader not only inside the architect's creations but also through their heating and cooling systems, atop their cantilevered roofs and under their concrete foundations. In examining Wright's 70-year career, University of Florida architecture professor Robert McCarter tracks the genesis of Wright's open plan design and layman accessible blueprints. These revolutionary concepts suddenly made drafting look simple—especially since the master sometimes constructed an entire project for months in his head before nonchalantly sketching it in just a few hours. • The urge to renovate may be primal, but don't underestimate the impact of wallboard, World War II and feminism. In *Do-It-Yourself, Home Improvement in 20th-Century America*, Carolyn M. Goldstein examines the forces that made homeowners ashamed to hire a handyman. Packed with vintage magazine advertisements, period photos and cartoons, the book traverses the do-it-yourself movement's peaks (the invention of PVC pipe), valleys ("before and after" contests that spelled the death of lovely Victorian porches) and strange plateaus (women using their husbands' electric drills to mix milk shakes). Goldstein, a National Building Museum curator, also credits television home shows with keeping the home-improvement spirit alive. Who's to argue?

With his book Frank Lloyd Wright, *Robert McCarter would like to compel readers to "visit Wright's buildings—to inhabit and measure them with their feet, their hands and their eyes."*



In the '20s, mail-order outfits targeted rural families for products such as paint, near right, but by World War II home repair had become a patriotic duty, far right.

Shed No Tears

For readers who doubt that *This Old House* do-it-yourself projects are truly doable by anyone but master carpenter Norm Abram or contractor Tom Silva, we offer this garden shed based on blueprints published in our September/October 1995 issue. Bob O'Connell, a designer in the magazine's art department, built the 6-by-8-by-6-foot structure in his backyard in Woodbridge, New Jersey, in only one weekend—without a single distress call to Norm or Tom.

(extras)

EVENTS & APPEARANCES

STEVE THOMAS

- May 14—Peabody Essex Museum, East India Square, Salem, Massachusetts, public lecture "Behind the Scenes at *This Old House*", 8 to 9 p.m., $8 for museum members, $12 for nonmembers; 800-745-4054

HOME SHOWS

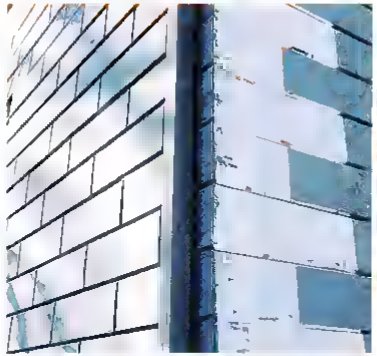
- April 25 to May 3—Parade of Homes, Fargo, North Dakota; Mon. to Fri., 701-232-5846
- May 23 to 31—Miami International Home & Garden Show, Miami Beach Convention Center, 888-775-3462

HOUSE TOUR

- May 22 to June 28—Milton *This Old House* Show Tour, 1144 Brush Hill Road, Milton, Mass., tickets, 617-931-2787, children under 12, $10, WGBH members and seniors, $19, adult nonmembers, $22.

House of a Different Color

Jeremiah Lee was clearly building to impress when he constructed his Palladian mansion in 1768 in Marblehead, Massachusetts. Unfortunately, skilled stonemasons were in short supply in colonial America, so Lee—one of the "codfish aristocrats" who trawled their way to wealth—made do with a facade of beveled pine rectangles covered with sand-studded paint that sparkled in the sun like real stone. More than 200 years and 20-odd coats of lead paint later, the Jeremiah Lee Mansion museum sported an inaccurate generic Georgian-revival look of grey with white trim until the Marblehead Historical Society, which owns the museum, decided to redo its original sand-painted finish. Restoration specialist John Booth hand-scraped down to the pine and painted with a roller—leaving a textured surface for sand to cling to—then blasted on the granules with a 4-horsepower compressor. In Lee's day, they used a bellows. Perhaps the laborious process merited the time and expense for someone trying to keep up with the Hancocks.



Now that the Marblehead Historical Society has repainted the Jeremiah Lee Mansion, which had a historically inaccurate gray facade with white faux quoins, above, the house wears a monochromatic finish embedded with sand, below, as in colonial times.

Between a Rock and a Crawl Space

A splashproof camera secured to biceps documents dry rot and other gnarly conditions during pre-renovation inspections.

Like rock climbers searching for a toehold 1,000 feet up the face of El Capitan in Yosemite, house renovators who go rappelling down a drainpipe or spelunking through a crawl space must be unfettered by clunky gear, their hands free to grab a crucial tool—or simply hold on for dear life. A few lightweight climbing accessories can make expeditions to the far corners of the house safer and more productive.

A curved-handled flashlight hangs lanyard-style from the wrist or hugs the waist or head.

More than 100 implements fit into a backpack with sleeves, pockets and Velcro restraints.

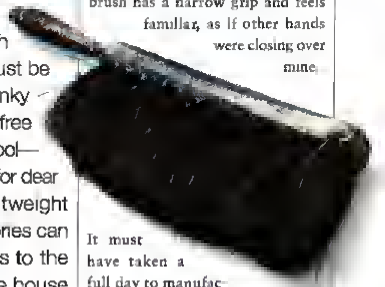
A mini pack holds an abridged tool collection without throwing ladder climbers off balance.

HAND TOOLS AND BRUSH: MICHAEL LYNAM. CAMERA AND ROCK-CLIMBING GEAR: JAMRIN HASHIMI. JEREMIAH LEE MANSION: JOE YUTKINS

UNSUNG TOOLS

Hiram's Brush

A clean bench is a happy bench. My favorite brush is a century-old tool with horsehair bristles, its handle made of pine darkened by time and use, its exact age a mystery. With one sibilant sweep across the maple surface of my happy workbench, an hour's shavings and sawdust disappear. This antique brush has a narrow grip and feels familiar, as if other hands were closing over mine.



It must have taken a full day to manufacture, from its beginnings on a lathe to the gluing of its 3-inch bristles. Indeed, 40 tufts of hair sprout from the head. The bristles are ancient but still soft and resilient, curved by countless strokes. Half my life ago, I paid $1 for it at an estate sale at the woodshop of a builder named Hiram. When I pass it down, my grandchildren will also call it Hiram's brush, although they may not know why. —*Jeff Taylor*

THIRD HANDS *The latest tools for the macho set pack the palm with more potential*

The novelty of locking-jaw pliers nearly overshadows a convenient thumb stud for making the knife blade accessible

Eleven blades perform 23 functions including those of a combination metal file and hacksaw.

Although surprisingly few blades fit into a 12-ounce heavyweight, its two fittings accommodate auxiliary screwdriver bits.

A six-ounce minimalist slims down to eight blades and is relatively lightweight but sacrifices a safety lock.

Each blade can fold out whether pliers are open or folded, laminated jaws, rivet-pivot hinges and ergonomic grips allow for smooth handling

Shedding pliers saves so much weight and bulk that scissors and a flashlight can snuggle in effortlessly.

FOR SOURCES, SEE DIRECTORY—PAGE 185

There was a time when hauling 7,300 pounds was unheard of in the class.† Now, with Durango's maximum available towing capacity, it's all in a day's play.

Durango's theater style seating has a patented Fold-and-Tumble™ feature that you'll just flip over. It lets passengers in the optional third row get in—and out—with ease.

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†Available feature comparisons vs. domestic compact SUV models. Excludes other Chrysler Corp. vehicles. All comparisons based on data available at time of printing.

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BY MARK FEIRER

Using a string trimmer, says landscaping expert Roger Cook, is like a "dance with one's only an elegant partner."

LAWN ORDER

Agile and versatile, string trimmers manicure yards better than any other tool

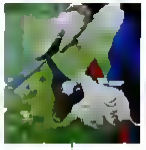
At the edge of a lush, green and—almost—perfectly groomed lawn, landscaper Roger Cook yanks the starting cord of a 15-inch handheld line trimmer, fiddles with the choke, gooses the trigger and marches off to attack a few renegade patches of grass that his lawn tractor has missed. Locking in on his targets, Cook buzzes grassy fringes sprouting near rock walls and whisps of grass ringing trees. The trimmer is an obnoxious critter, noisy and noisome, spewing bits of green in every direction, but no other tool details a freshly cut lawn faster.

Known by a number of aliases—rotary trimmer, weed trimmer, nylon-line trimmer—a typical string trimmer consists of a hollow metal baton with a sputtering two-cycle engine at one end and a fast-spinning plastic hub at the other. Inside the baton is a steel driveshaft or flexible cable. The sealed hub contains anywhere from 25 to 75 feet of stout nylon or copolymer line. When the trimmer is at rest, a couple of 4-inch strands curl out from the hub like twin cowlicks. Once the head starts spinning at about 8,000 revolutions per minute, the strands straighten out into ruthless plant assassins. The whirling strings dig out pesky growth in the cracks of flagstone walkways and annihilate weedy plots. With the right accessory, a simple trimmer can even till the earth, throw snow or slice saplings

PHOTOGRAPH BY JOSHUA McHUGH

Tune Ups

Clogged air filters choke engines dead. After four hours of trimming, rinse in soapy water and dry



Brush blade too dull? Sharpen cutting edges with a flat file. If the blade is bent, replace it.

When rewinding heads, keep coils snug and parallel to prevent string from fusing to itself

to the ground (see "The Great Trimmer Transformation," page 38).

As Cook continues his search-and-destroy mission, he concentrates on the blurry orange halo at the end of the tool. Moving up to 600 feet per second, the tip of the line cuts best, but Cook takes care not to cut lower than a lawn mower would. "If you look at where you've been and see a narrow swath of grass that's a slightly different color than what's next to it, you've scalped the lawn," he says. Scalping makes turf vulnerable to disease and dehydration in hot weather, not to mention making a lawn look pathetic. To avoid buzz-cutting, Cook keeps the hub level. He is especially dainty around tree trunks because repeatedly scoring the bark can kill a tree.

String trimmers can be cantankerous and unpredictable, but the tool's mulish disposition usually results from poor care and misunderstanding by users. Just as a cheap blade can slow a good power saw, a mediocre hub can hamper a string trimmer. The best hubs are made of fiberglass-reinforced polycarbonate. Most hubs have a bump-button on the bottom, which wears out after a season or two of everyday use; some heads have parts that can be serviced while others must be replaced. Cook's trimmers have a bump head. Periodically taking a break from trimming to rap the bump button releases an inch or so of line to replace what has worn off. A metal edge slices off any excess once the head resumes spinning. If the edge is missing, the excess line may overload the engine and make it work unnecessarily hard.

Heads that don't feed string properly have exasperated so many users that some manufacturers are replacing spool heads with fixed-line heads: a simple disk that holds two short strands of line that can be easily replaced when they wear out. The downside to these new heads is that users must cut the juice to replace a fixed line—a too-frequent occurrence for professionals like Cook, who prefers the bump-and-run type. He loads his own hubs with 30-foot lengths of nonfilament line whacked from a 25-pound roll he keeps in the back of his pickup. "It takes about five minutes once you get the hang of it."

Of course, getting the hang of it is literally the rub. A poorly wound head can cause chafing among overlapping layers of line, generating heat that fuses the strands together. Carefully winding the string in near, parallel coils or using replaceable prewound hubs solves that problem. Although nylon is most commonly used, high-quality copolymer line makes winding easier because it's stronger as well as more flexible and abrasion resistant. To test a string's quality, tie it in a knot. The good stuff can form a small tight knot; lesser line makes a large, loose one. Cook says that standard .080-inch diameter round line (round in cross section) suits him fine. But users may also want to try the new edged lines that have ridges intended to slice more cleanly through vegetation.

All engines may look alike, but one inconspicuous feature distinguishes light-duty ones from those that pros use: a pull cord at the back of the engines, indicating that bearings support the crankshaft at both ends. Less expensive engines have cranks that are cantilevered at one end, and pull

(continued on page 42)

POWER ON A STICK

STUDIO SHOTS BY PETER ARNITT• TUNE UPS BY JOSHUA MCHUGH

POWER HEAD
engine, clutch, and fuel system

STARTER HANDLE

AIR CLEANER

HUB/STOP SWITCH
safety shutoff

CUSHION GRIP

FUEL TANK
for gas/oil mix

THROTTLE TRIGGER

HORN
contains driveshaft or drive cable

LOOP HANDLE

GEAR HOUSING

CUTTER GEAR ON HUB

NYLON LINE

DEBRIS SHIELD

HORN KEY
A curved shaft electric trimmer is fairly quiet. Although the machine's light weight makes it easy to handle, the short power cord limits its range. Best for light duty close to the house.

CLEAR-CUTTER
A brush cutter feels like a straight-shaft string trimmer that's on steroids, with a toothy steel blade in place of a string. Able to cut down 3-inch saplings or woody vines without leaving a stump, it's not for the timid.

SWITCH-HITTER
A knob on the boom of a split-shaft string trimmer makes replacing the head with seasonal accessories easy. A shield on the hub deflects flying debris.

CLEAR CHOICE
A four cycle trimmer emits fewer hydrocarbons and has more torque than a two cycle engine. The split-boom accommodates various accessories and the J handle reverses for either left- or right-handed use.

PHOTOGRAPHY BY PETER ARNITT

THE GREAT TRIMMER TRANSFORMATION

Like snowbelt ice-cream shops, line trimmers typically get busy for four months a year. Recast split-shaft models, though, work year-round. A peg-and-socket coupling on some driveshafts allows accessories to dock and lock in seconds.

Leaf Kicker

Blow away leaves—or suck 'em up by attaching a canvas collection bag that easily converts the blower into a power vacuum

Limber Limber

With a 10-inch chain saw bar baring its teeth, small tree branches that are hard to reach fall to the ground in just moments.

Dirt Tiller

Two steel tines oscillate on the gear-driven shaft of this close-quarters garden cultivator, which is pulled across soil, not pushed.

Grass Edger

A guide wheel raises or lowers cutting depth to keep an edger attachment out of the dirt as it tackles turf along walkways

Hedge Pruner

A 20 inch double sided, double-reciprocating blade makes a super long chipper for sculpting privet hedges and other tall bushes

Snow Thrower

Directional vanes throw snow right, left or ahead while a rubber-lined impeller scours driveways and side walks safe and clean

PHOTOGRAPHY BY PETER ARNITO

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Front Rear

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WHACKING TALL

Before putting a trimmer to work, Roger Cook always scouts the brushy areas. Small rocks are hard on blades, although the biggest hazard is glass, which sprays like shrapnel when a brush cutter blade hits it. Cook's reconnaissance missions occasionally turn up a bird's nest. "You want to find them before your string trimmer does."

Cook trims encroaching grass near walkways by tipping his string trimmer up on edge. The tricky cut takes practice, however, because the string kicks up dirt if it dips too low. This kind of trimming calls for a firm grip and a steady gait with elbows held close to the body so that only the tip of the line touches the grass

Nylon line beats a blade in light brush or tall grass, particularly if conditions are wet, because the line rarely binds up with severed strands. Cook keeps the head level and sweeps it back and forth in narrow arcs as he walks slowly forward. Swinging the trimmer too far left and right is a common mistake causing a loss of balance

When trimming near woodwork, always know where the tip of the string is—or your post will be toast. The flailing string can wear through finishes, peel wood shards or leave unsightly rings of wear. Trimming too close to rock also wears out the string prematurely. The string should kiss the obstruction, not whack against it.

PHOTOGRAPHY BY JOSHUA MCHUGH

To a Kubota TG owner, mowing the lawn is not a mere chore. It's a pastime, a passion, an obsession. Perhaps that's because the new Kubota TG is more than a mere lawn mower. Built like a sports car, this highly advanced tractor comes fully loaded with electronic rack-and-pinion steering, Cushion Ride Suspension and an 18-hp liquid-cooled gas or diesel engine. Which all adds up to the smooth, quiet, comfortable ride you've always dreamed of. For more details, and possibly a new fixation, call 1-888-4-Kubota, ext. 115

Kubota

K BOTA TRACTOR CORPORATION

K [illegible] Torrance, CA 90509-2992. Financing available through Kubota Credit Corporation. ©1998 K [illegible] T

(continued from page 36)

cords located near where the booms connect to the engine. Also worth looking for: anti-vibration mounts and an air filter easily removed for cleaning. (Choked filters reduce air intake, making engines run poorly.) Trimmers with centrifugal clutches have hubs that spin only when the trimmers reach high speed, so starting is easier and safer. Pull the cord slowly without starting the engine; if the hub spins, the trimmer has no clutch.

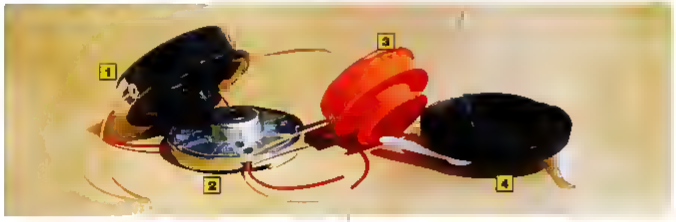
All trimmers run best on fresh fuel. Unless a stabilizer is added before storage (¼ ounce to the gallon), fuel deteriorates after a few weeks and forms compounds called varnishes that clog fuel lines. Oil, too, must be added to the gasoline—oil is what lubricates a two-cycle engine (and, alas, fouls the spark plug). The only thing to do with stale fuel is to take it to a recycling center. To avoid getting stuck with unused fuel, at the end of the trimming season run the engine until it's dry.

Even with a perfectly maintained trimmer, Cook advises taking special safety precautions. Cook scouts brushy areas and deep grass before he trims—just as he sizes up a tree before cutting it. Hazards such as stone, brick, cement and glass always pop up where least expected—whipped into an eye at high speed, even a blade of grass can slice delicate tissue. Eye protection, therefore, is an "absolute must," says Cook, as is ear protection. One of his biggest fears, however, is yellow jackets. "Hit a nest," he says, "and you'll have the whole hive up and at you in about 30 seconds." What then? "Get out of Dodge." ■

GETTING INSIDE THE HEAD

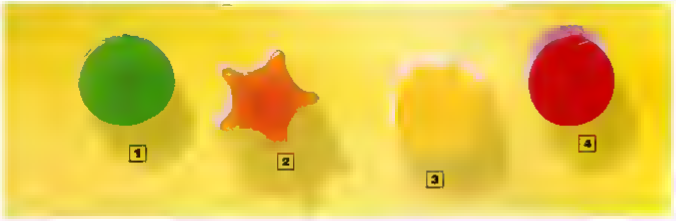
Scythes of Relief

The many options for metal or plastic blades, which replace string heads on some models, tackle woody and pulpy plants. **1.** *A reversible four-lobe steel blade for heavy grass or dense weeds.* **3.** *An 8-inch-diameter brush blade for saplings.* **3.** *A disposable three-lobe plastic blade for light weeds.* **4.** *A sapling blade, which has 25 steel teeth.* **5.** *A three-lobe steel blade for dense weeds.*



Happening Hubs

Various trimmer heads are available to suit various conditions. **1.** *A bump head that holds 50 feet of line for lots of trimming between head changes.* **2.** *A fixed line head for low-hassle line loading.* **3.** *A lightweight bump head that holds 15 feet of line, useful for infrequent yard manicures.* **4.** *A swing-arm head with pivoting blades—safer than rigid blades—for dense grass and heavy weeds.*



What's My Line?

In cross section, the standard trimmer line is round. Specialty lines, star- or cross-shaped to improve cutting action, come in several diameters. **1.** *.156 inches magnified 5.2 times.* **2.** *.130 inches magnified 5.8 times.* **3.** *.086 inches magnified 9.4 times.* **4.** *.130 inches magnified 5.8 times.*

FOR SOURCES, SEE DIRECTORY—PAGE 181

PHOTOGRAPHY BY PETER ARD TO

THE RIGHT TOOL FOR KILLING BUGS INDOORS & OUT

Whether you're tilling the soil or painting the rafters, you need to use the proper tool to do the job right. For killing harmful, annoying pests like ants, aphids, flies, roaches, ticks and beetles, the makers of RAID® have fashioned the perfect tool—RAID® House & Garden.

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Porter Cable's tradition of innovation continues with the new 557 plate joiner kit, combining industry leading power with unequalled precision and flexibility. Now with 2" and 4" diameter blades for both standard and our new, smaller face-frame biscuits. So if you're looking to "join" follow the leader to your local Porter Cable retailer. Or call 1-800-487-8665 (519-836-2640 in Canada) for the dealer nearest you.

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BY WENDY MARSTON

STONE IN A SACK

To make bagged concrete, just add water

Getting a little bit of concrete was once beyond most people's reach. It came already mixed with water in giant trucks—minimum delivery, a 2-ton cubic yard—or from contractors who had big drum mixers and could afford to buy hundreds of pounds of raw ingredients. Most anyone who wanted just a smidgen to patch a sidewalk or anchor a post had to cadge leftover slurry from job sites.

Then along came Arthur Avril. As the owner of a company in Akron, Ohio, that truck-delivered concrete, he'd seen plenty of scavengers carry away his surplus in buckets, wheelbarrows, even ashpans. So in 1936, he started shoveling dry cement, sand and gravel into paper sacks. His nephew, Jack Avril, remembers: "I was 5 when all this was happening. He just said one day, 'Why don't we put this up without water, like Duncan Hines cake mix?'"

The elder Avril's epiphany, which he dubbed Sakrete, made concrete available to the masses, and the masses made his product's name synonymous with bagged concrete. Now, scores of companies offer bags of dry mix which, on

PHOTOGRAPH BY DIANA HAAS

TEAR, MIX AND SPREAD

Mortar

A blend of cement, ground limestone and graded sack sand makes a mix for laying brick and stone. An 80-pound bag will bond about 65 bricks with ½-inch joints. Compressive strength: 1,000 pounds per square inch.

Self-leveling

Flows like eggnog to even out sloping or bumpy floors. Often poured over radiant heating tubes. Sets within 15 minutes. Compressive strength: 4,000 to 5,500 p.s.i.

High early-strength

Can support a car in 10 to 12 hours—less than half the time required by regular concrete. The fast-setting calcium rich mix is especially useful in cold weather. Compressive strength: 5,000 psi.

Sand mix

Resurfaces and patches chipped concrete. The mix can also be used as a stucco. Should be used in thicknesses of less than 2 inches. Compressive strength: 5,000 p.s.i.

Resurfacing

Vinyl and other additives strengthen the bond with old concrete. Brushed or troweled in ⅛-inch layers, it gives grimy surfaces a freshly poured look. Compressive strength: 5000 p.s.i.

White cement

A special kiln temperature imparts the color, or lack of it. Often used in swimming pools and as the cement in stucco. Compressive strength: 6,500 p.s.i.

Anchor cement

Used inside or outside on concrete floors and walls to anchor cement screws, bolts, railings and hooks. Sets in less than 10 minutes. Expands and hardens to become stronger than basic concrete. Compressive strength: 7,200 p.s.i.

Hydraulic cement

Expands to plug holes and cracks, even underwater. A three-minute set time means it must be mixed and used immediately. Compressive strength: 5,000 psi.

PHOTOGRAPHS BY JAMES WORRELL

Fast setting

Doesn't need mixing. Just pour water in a hole, brace a metal post upright and dump the mix around it. Sets in 20 to 40 minutes. Supports heavy objects in about four hours. Compressive strength: 4,000 p.s.i.

Colored

Adobe-colored concrete cures to a warm, earthy hue redolent of the Southwest. A special manufacturing process, not the addition of synthetic pigments, creates the color. Compressive strength: 5,600 p.s.i.

Fiber reinforced

Contains thousands of tiny synthetic fibers that increase tensile strength and reduce cracking and chipping. Eliminates the need for wire mesh reinforcement in sidewalks and driveways. Compressive strength: 3,500 p.s.i.

Basic mix

The standard combination of portland cement, rock and sand is economical and has one of the longest setting times. A 60-pound bag yields 2.6 square feet of concrete 2 inches thick, anything thinner robs the mix of aggregate and makes it more vulnerable to cracking. Compressive strength: 4,000 p.s.i.

an average day, are trundled out of home centers and lumberyards by the thousand, destined for patios, walkways and deck footings across the United States.

It's not only the basic gray all-purpose concrete that Avril would have recognized. Consumers can choose from bags or buckets of patching mixes, topping mixes, colored mixes and masonry mixes, not to mention mixes for anchoring bolts, coating walls, laying bricks and leveling floors. Some mixes are strengthened with crack-stopping fiberglass, others have adhesion-enhancing vinyl additives. Still others require no mixing at all: Just dig a hole, and pour it in.

All these blends have one ingredient in common: portland cement—a fine, flourlike powder that gives concrete its color and rock hard strength. Natural cement—as opposed to the manufactured, portland variety—was discovered by the Romans, who mined it from pumice deposits on the slopes of Mount Vesuvius and elsewhere. Mixed with water, the crushed pumice turned, as if under Medusa's gaze, to stone. Today, instead of relying on volcanoes, manufacturers bake the necessary minerals (calcium, silicon, aluminum and iron) in giant rotating kilns heated to a super-Vesuvian 2,800 degrees Fahrenheit. Roman builders found they could stretch their precious supply of cement—and make it stronger—by adding crushed stone, gravel and sand. Presto! The world's first concrete. Today's concrete is not much different. A typical bag of the basic mix contains one part cement, 2 to 3 parts sand and 3 to 5 parts gravel or rock.

"It's fantastic for a step or a patch," *This Old House* contractor Tom Silva says, "but I wouldn't go past a dozen or so bags." Because each 60-pound bag costs $3.25 and yields only 1 cubic foot of concrete, it's too much effort and too expensive for him to use on big jobs. And using too many small batches also raises the risk of cold joints—weak spots that result when a batch starts to set before the next one is poured.

When the job is small enough for bag mix, Tom follows some simple rules. He stirs the dry mix in a wheelbarrow or bin, to blend the gravel that settles in shipping. Then, into a little crater in the mix, he adds some clean water, which he chops in thoroughly with a hoe or shovel. "You want to add the water slowly, in stages, as you

Brighten up your gray

New custom colors have broadened the concrete palette beyond dull gray. Most color additives, which come as either powders or liquids, are thrown into the water before mixing with concrete. A new type of brush-on dye gives old surfaces a different tint.

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Think you can't be flooded? Think again.
If you don't live near water or live on a hill and believe you're safe from floods, just listen to the news. Experts report that weather patterns are changing fast—so are your chances of being flooded.

In fact, last year, two out of three federally declared disasters were flood related. And what's more, 25% of all flood claims came from areas no one considered high risk.

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But act quickly. While a flood can strike as fast as lightning, it takes 30 days before coverage begins.

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ALL MIXED UP

Once the bag has been torn open and the water poured, it's time to sweat all the way to a thorough mix. Some tools make the job easy; others turn it into a calorie-burning chore. Tools need immediate cleaning. A hard spray of water will remove big chunks; vinegar dissolves the remaining cement film.

FOOT-POWERED
The rolling mixer's bin, which accommodates one 60-pound bag, corkscrews an even mix. Its calibrated screw-on lid measures water.

GAS-POWERED
One-speed gas engine turns the steel tines of a 25-pound power mixer, which works like a rototiller and has its own plastic tub. Also available in a 120-volt electric model for indoor use.

ELECTRIC-POWERED
High torque electric mixer has six speeds ranging from 200 to 550 revolutions per minute. A right angle handle helps steady the tool as its paddle spins through the mix.

MUSCLE-POWERED
The traditional bin and hoe provide a good workout. Recommended only for small jobs and young backs.

mix," he says. After a few minutes of churning, the wet concrete should be uniformly stiff—like peanut butter—with no dry spots. Tom adds a bit more water if the concrete is crumbly, if it's soupy, he'll put in more powder.

Stirring concrete is hard work. "If you aren't breaking a sweat, then you aren't mixing it right," Tom says. To ease the task, many people over-water, but the waterlogged concrete just ends up weaker and more susceptible to shrinking, cracking and abrasion.

Once water is added to a dry mix, the clock starts ticking. Basic mix sets in about 90 minutes, depending on the weather. Heat speeds the process, cold slows it down. Some job site Betty Crockers add sugar or Coca-Cola to delay hardening. Better to follow directions, using a manufactured set retardant when temperatures soar or an accelerator when they plunge. But sometimes even the most careful work comes to naught. More than once, Tom says, "We've finished smoothing out a sidewalk when a dog comes up, wagging his tail, and walks right through it."

Once set, fresh concrete needs to rest for six to eight days in a moist, frost-protected environment so that the cement and water molecules can bond and gain strength. Swaddling new work in damp burlap bags, plastic sheets or waterproof paper helps ensure a complete cure. Properly mixed and cared for, concrete can take 28 days to reach its required compressive strength—at least 2,000 pounds per square inch. After that, hardening will proceed, albeit very slowly, as the cement continues reacting to trace amounts of water. Some 70-year old concrete is now twice as strong as when it was fresh. The march toward a stonelike state is inexorable. There's no turning back, except with a jackhammer. ●

Your Own Plant

For bigger, more demanding jobs where the plain old slurry from a truck won't do, Spec Mix Inc. dry-blends computer-customized mortar or concrete, neatly bundling each mix in 3,000-pound bags for contractors and home owners. The Minnesota-based company then delivers the bags to job sites, along with a 17-foot collapsible silo. Contractors forklift the bags into the silo and can then dispense the needed amount into a mixer, saving time and back strain. One bag of concrete makes about 25 to 27 cubic feet of wet mix and costs around $100.

FOR SOURCES, SEE DIRECTORY - PAGE 10

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BY JEFF TAYLOR

MECHANICAL SCREWDRIVERS

Before cordless, carpenters could feel their work

I was lost. The subway had taken me miles into deepest New York City and, when I emerged from the hole, it could have been Little Italy, Greenwich Village or Coney Island. Summer sidewalks stretched to infinity in both directions, full of people who spoke an odd variant of English. I was almost hyperventilating from culture shock; I come from Summit, Oregon, which has one general store surrounded by a coyote-filled mountain wilderness. When I spied (and, even before that, smelled) a little shop that sold hammers and saws, I walked inside to ask directions.

It was less a hardware store than a time machine with oiled wood floors. Old (and even older) carpentry tools were racked up to the ceiling, and the shelves were crammed with exotic and familiar hardware from dowels to trowels, saw sets to fretsaws, cabinet pulls and push drills. Now I knew where I was. It was sanctuary, refuge, a carpenter's vision of heaven.

At the back, a canvas-aproned gaffer was rooting around in pigeonholes, muttering umlauts. Under his oak-and-glass counter, a Yankee screwdriver had been waiting in its box, untouched, for ages. It was a full 2 feet long. My brow prickled. My hands ached for it as I succumbed to the fever of tool lust. Sold.

"Vood you like to see da bits?" The proprietor looked like Albert Einstein, alive and moonlighting. "Vait. I show you." He pulled out a flat purple case, and there they were, multiple flavors and sizes of screwdriver tips, dozens of push bits, chuck adapters, hex sockets, pipe reamers and countersinks, all nested in sweet little felt-lined compartments. With trembling hands,

Mechanical screwdrivers, whether the push type or the ratcheting type, connect craftsmen to their work better than any power tool can. Goode Brothers of Greenfield, Massachusetts, patented this spiral-threaded push driver in 1897. It has a clockwise-threaded steel shaft inside a brass shaft spiraling counterclockwise. The user can engage either shaft by tightening its brass collar.

PHOTOGRAPHS BY BARRY WHITE

HAND TOOL

CLICK-CLICK-CLICK

Ratcheting screwdrivers enable the hand to keep a firm grip and apply steady pressure as the screw turns, eliminating the frustration of slipping bits and the fatigue of excessive twisting. Ratcheting mechanisms are rated to withstand at least 220 inch-pounds of torque, much more than the 65 to 105 inch-pounds that humans can apply to a straight-handled screwdriver. In these tools with angled handles, the mechanisms have to withstand an extra 100 inch-pounds of torque for every inch the handle projects past the shaft's centerline.

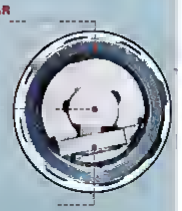
A compact right-angle handle gives more turning power with less hand strain. Its handle is offset 2½ inches, increasing the torque over that of a straight handle by about 250 inch-pounds. Needle-bearing ratchet. Maximum torque: 350 inch-pounds.

A tilting head locks into seven positions to permit a range of work angles, allowing the hand to exert more leverage. The cushioned no-slip rubber grip looks like a motorcycle handle. Dog-and-slot ratchet. Maximum torque: 240 inch-pounds.

A sculpted handle feels molded to the hand, and it doesn't require the other hand to change the direction that the shaft rotates. Needle-bearing ratchet. Maximum torque: 220 inch-pounds.

Two holsters house 12 bits around the shaft. A ball bearing on the bits and a magnet in the shaft prevent the bits from slipping out. Dog-and-slot ratchet. Maximum torque: 240 inch-pounds.

Mechanisms



Twist-ratchet screwdrivers rotate their shafts with either a clicking dog-and-slot device, above, or a silent needle-bearing mechanism. In a dog-and-slot screwdriver, a spring-loaded metal bar (the dog) pops into slots around the inside of a metal collar. The angled off-center dog lets the collar turn in one direction but not the other. When the guide slides the dog over, rotation reverses. The needle-bearing ratchet relies on the friction of a jagged off-center wheel grabbing a smooth metal hub. A plastic needle angles the wheel, determining the direction in which it holds fast.

I purchased one of each type.

Back in Oregon, I used that Yankee at least once a day for 10 years. It still works perfectly, as do the dozen or so mechanical screwdriver models in my toolbox. Some, like the Yankee, drive screws with a push, some ratchet with a twist, but all are vast improvements on their ancient and brutish predecessor. In the days when they were still new, one factory owner hailed them as the "most glorious boon to the woodworker and mechanic since the invention of the lever." That seems like excessive praise, but anyone who's spent a few 10 hour days turning screws the old-fashioned way knows it's more tedious than milking a cow—and murder on the forearms.

A Yankee makes driving screws enormously easier. One or two pushes quickly spin the screw down into its pilot hole (made earlier by the same tool with a drill bit in the chuck). The basic design has remained the same for more than 70 years: an internal spring-loaded shaft twirls on threads cut in a crisscross spiral pattern. Moving a button on the handle reverses the direction of spin. One turn of the knurled brass collar locks the shaft in place, either at full extension or closed. From its closed position, the shaft can shoot out of its handle, making the sound of an angry rattlesnake. And it's just as dangerous, if the bit is pointed at anyone. My wife almost found this out the first time she played with a loaded Yankee, but fortunately the bit crashed through a window. After that, I no longer locked the collar down.

My ratcheting screwdrivers pose no such danger to inexperienced bystanders, and they fit into tighter spaces than my Yankees will, but their tiny clicking dogs can't spin a screwhead as quickly.

Of course, most screws these days are driven with battery-operated drills. With one of these whining electric pistols, shooting screws requires only a trigger finger and a fully charged power cell; a robot can be programmed to do it. And that's the real tragedy of a power-driven fastener. Gone is the tactile connection between the worker, the wood and the wood screw, a subtle affinity of tool to hand that stops threads from stripping or heads from being mangled beyond redemption. Old-timers call it "mechanic's feel." It used to be at the heart of all craft.

With the rest of the modern world, I've adopted the cordless drill for its speed and efficiency. In daytime, my mechanical screwdrivers are now backups when the battery is charging. But late at night when everyone else is sleeping, I sometimes slip into my shop and quietly assemble a cabinet or hang a few shelves with my Yankee. Unhurried and almost silent, it makes a soft clickety-whir that awakens only memories. Each screw drives a little differently, revolving home under the power of my hand. These are elegant and peaceful moments. Time is not always of the essence, when the essence itself is timeless. ■

The spiral-ratchet Yankee, above, has a crisscross pattern machined into the shaft. With the flip of a switch, the tool can go from driving screws to extracting them. North Brothers of Philadelphia made the first Yankee in 1923, Stanley Tool Works, which bought the design 22 years later, continues to produce it.

FOR TOOLS, SEE BUYER'S GUIDE, PAGE 101

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i need more me

BY CURTIS RIST

MEDIA BLITZ

Coming soon to a room in your house

In Steve Agajanian's 21-by-24 foot media room, a wireless control panel (on the coffee table) dims the lights, chooses a compact disk and queues up a movie. Although the control panels can cost up to $12,000, one installer says that he "considers it malpractice not to include them."

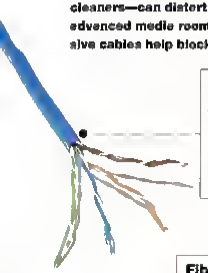
Not long ago, Steve Agajanian of Pasadena, California, possessed an entire universe of electronic equipment. But he was far from its master. His living room contained a stereo, a television, a videocassette recorder and countless receivers and amplifiers—each with a separate remote control to adjust it. He stacked the remotes on his coffee table. "It was one of those nightmares," he says. "You'd reach to turn up the volume because you'd be interested in something on the television, and you'd end up switching channels."

No more. Last year, Agajanian remodeled his house and, in the process, created an elaborate 21-by-24-foot media room. His home entertainment center contains a dizzying array of gizmos: a 100-inch television screen linked to an overhead projector, surround-sound speakers, a digital satellite system, a digital versatile disk player and Web TV. Nor are these toys confined to one room. At the touch of a switch, he can listen to compact disks or watch movies in just about any room in the house, even his bathroom. "I've always been sort of a homebody,"

PHOTOGRAPHS BY DAVID ALBANESE

THE CABLES

Electromagnetic interference—from refrigerators, microwave ovens and vacuum cleaners—can distort even the most advanced media room equipment. Expensive cables help block interference.



Category-Five Telephone Cable

Twisted wires keep signals clear for faxes, phones and computers. Price: 25 cents to 35 cents per foot.

Fiber-Optic Cable

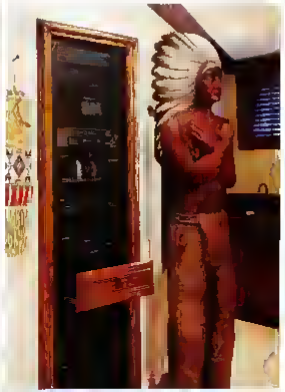
Spun from glass—and naturally self-insulating—this high-capacity cable handles all digital signals at the speed of light but can't be used to connect speakers because it can't handle direct current. Price: $1 per foot

RG6-Quad Coaxial Cable

A greater transmission capacity—and quadruple insulation—makes this the best choice for hooking up cable television and digital satellites. Price: 25 cents to 45 cents per foot

Network Cables

A box filled with resistors and inductors creates a perfect speaker signal. Price: $1.25 to $6 per foot, on average, although a top-of-the-line 10-foot pair, pictured, costs $10,000.



Because of the complexity—and cost—of media room equipment, installers like to stow it in specially built cabinets such as Agajanian's, above, which Mike Hymes's company installed. "It keeps home owners from fiddling with the control levers," Hymes says. Installers prefer to do that themselves, approaching the equipment through a panel, right, that conceals an implausible tangle of connecting wires.

says Agajanian. "Now I really never go anywhere. I'm in love with this system."

It's a love shared by many. Screening rooms once belonged exclusively to the realm of the Hollywood mogul. Although the electronics industry tried to popularize big-screen television as an affordable alternative, the sound and picture lacked clarity, and the constant addition of new components created a mishmash of equipment that was all but unfathomable. Media rooms, as they are now called, can tame this electronic jungle and integrate it with the rest of the house. Proper design and installation are crucial for a media room (as they are for a well-planned kitchen). "You can't just stick this equipment on adjustable shelves," David Kroll of Media Systems in Boston says. The goal is to create a cozy, family-room setting that softens the equipment's technological edges with comfort and convenience. The systems also offer features such as built-in access to cables, which makes it easy to maintain and upgrade equipment. "We're trying not to give people a room full of media, but media in a beautiful room," Kroll says. The approach seems to work. Last year, consumers shelled out more than $3.6 billion on custom electronics (equipment sold as part of a designed installation), up 22 percent from 1996, according to the Custom Electronics Design and Installation Association, which represents 625 companies. There appears to be no limit on how excessive a media room system can become. For instance, the cable that connects all of Agajanian's equipment—including five telephone jacks in his bedroom alone—would stretch 5 miles.

Reduced to the basics, a media room's key components are a television and a sound system. "You don't have to do it in a big way," says Mike Hymes, whose Micheal's Company in Van Nuys, California, designed Agajanian's system. "I've done houses where

WRITER: JAMES MORRELL

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Soundproofing the Room

Realistic sound can be beautiful—when contained in the media room. Sound vibrations travel easily through wall studs, floor joists and even the fluffiest types of insulation. To make a room soundproof would require suspending the entire space to eliminate any structural connections to the surrounding building. "That's something you would do in an M.I.T. research lab—not a house," says *This Old House* contractor Tom Silva. To render the media room at *T.O.H.*'s project house in Milton, Massachusetts, extremely quiet, Tom employed several tactics. He chose low-density spray-on insulation to "fill every void." He used resilient furring channel, installing a grid of galvanized steel strips, above, perpendicular to the ceiling joists. Perforated with small holes, the ½-inch-thick channel separates the ceiling from the joists to obstruct the passage of sound waves. He also installed double layers of wallboard for the ceiling and walls, making sure that the seams of the first and second layers didn't line up, and leaving a ½-inch gap where the ceiling and wall would have met—more separations to keep sound from traveling.

we put a 32-inch television and two speakers in the living room and ran the speakers through the home owner's existing stereo receiver," he says. "For people who just want bigger sound but don't have the room or the budget, it works." If a home owner does have a spare room to convert entirely—even a small den, Hymes says—the next step up from two speakers is a surround-sound system. Whether they cost $1,000 or $100,000, these systems include five speakers and a sub-woofer, which makes low-frequency vibrations that are felt more than heard. "You can use surround sound on a 13-inch television and have as much fun as you have at the movies—minus the sticky floors," Steve Hayes of Custom Electronics in Falmouth, Maine, says.

Big-screen televisions start at $600, not bad compared to the cost for an overhead projector and a screen, a combination that starts at $3,500 and tops out at $500,000. "That's where you begin to draw the line between middling and media," Eric Borgstrom of Opus Audio/Video Interiors in New Haven, Connecticut, says. The centralized remote-control panel, which many of these systems require, can cost from $3,000 to $12,000 itself. "It's really easy for us to eat up $1 million worth of equipment," says Hayes. "But we can build a system for just about any budget right to the dollar."

For the media room at the *This Old House* project in Milton, Massachusetts, last fall, Hayes designed what he considers a modest system, sticking to the low end of the price spectrum but loading the room with gadgets: 53-inch television, surround-sound speakers, 200-disk compact disk changer, digital satellite system, digital versatile disk player and Web TV. The price tag for components alone: just over $12,000. Hayes skipped the centralized remote-control panel common in more expensive systems. "That would have added $4,000 to the cost, which just didn't make sense for this system," he says. But he connected everything to one remote control through the surround-sound receiver. The setup requires a lot of button pushing, but everything can at least be operated by one control, not several.

This Old House pre-wired the 20-by-14-foot Milton media room, above, with category-five telephone cable, RG6-quad coaxial cable and oxygen-free speaker wire. Tom Silva and Norm Abram built a removable button panel for the television cabinet. The television rolls out on wheels, and the vault provides access to all gadgetry.

Where good sound is concerned, the room itself is as important as the equipment. Sound should come directly from the speakers. It distorts if it ricochets off walls. "What you want to do is absorb the sound so it doesn't reflect," says Borgstrom. For the media room that he installed in the basement of a 50-year old house in Woodbridge, Connecticut, he outfitted the front wall with sound-absorbing fiberglass panels covered with an open-weave polyester fabric the texture of canvas. Borgstrom could have treated the whole room that way, but he worried about producing the equivalent of an anechoic chamber—an odd effect for a family room.

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MEDIA ROOM DESIGN BASICS

"Over and over, I see people put their television in a corner," says Steve Hayes, a media system designer "It's a huge mistake. You end up with bad view and bad sound." Instead, Hayes thinks of a square, with the viewer's ideal seat directly in the center. The relationship between the television (1) and the primary seating (2) is crucial. A good rule of thumb is a one-to-two ratio for the diagonal dimension of the television screen and the distance to seating. For example, if a television screen is 48 inches on the diagonal, seating should be about 96 inches away. To position the five speakers of a surround sound system, Hayes divides the width of the television screen into thirds and places two of the front speakers (3) a third to the right and left of the screen. He positions a small center speaker between the left and right front speakers, on the same horizontal plane. He installs the two rear "surround" speakers (4) behind the viewer, on the same plane as the front speakers, if possible.

"You'd be able to hear your heartbeat and the blood rushing through your veins," he says "I don't think it'd be very pleasant " Instead, skipping the fiberglass panels for the back wall, he fitted it with fiberglass-reinforced gypsum board built of hollow 3-inch cubes that scatter sound rather than absorb it "Acoustically, it makes the room feel larger," says Borgstrom.

Because of the scope of media rooms, many home owners turn to professionals—although finding a qualified installer can be tricky Some, known in the trade as "trunk slammers," operate from a car rather than an office "They may be honest, but how do you know they're going to come back if there are problems?" asks Hymes. He recently came to the rescue of home owners in Palm Springs, California When the media room in their $1 million house malfunctioned, they tried to call the installer to have him fix it But he had vanished, leaving behind a mile-long trail of inferior cables that wound through their house "The first thing we did was tear out all the wire and throw it in the trash," says Hymes

The Custom Electronics Design and Installation Association maintains a list of licensed and insured installers But to avoid problems, Hymes (who is not a member) recommends checking out three or four of an installer's recent jobs before going ahead "And not just on the phone," he says "Go over there, and take a look in person."

Advanced as they may seem, all media rooms begin to age technologically the minute they are finished "People get paranoid that technology will leave them behind," says Borgstrom The best anyone can do is to plan for change—however it turns out—by installing high-capacity lines such as RG6-quad coaxial cables to handle future loads Most installers go a step further. They install a metal conduit through which cables can be snaked without ripping out walls and cabinetry "You don't want to go back to the people whose system you just installed two years ago and say, 'You need a whole different system, and we have to tear up your walls to install it,'" says Borgstrom. Conduits forestall that "We call it future proofing," says Hymes, long a fan of conduits But, he adds, they don't solve everything "We have a customer now who's changing projectors The bottom line We have to tear out his ceiling."

Tuning in his 100-inch screen, Agajanian uses a centralized touch-control panel to flip from station to station, watching shows he concedes he "wouldn't have been remotely interested in were they not blown up to this incredible size with this big sound " Recently, he sat through a documentary on the helicopter "I felt like I was flying!" he says, his enthusiasm soaring higher than the subject matter "It even made me a little queasy." ■

FOR SOURCES, SEE DIRECTORY – PAGE 160

ILLUSTRATION BY LIN WILSON

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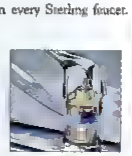

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BY MOREY STETTNER

LET'S BREAK A DEAL

You don't own the house until the keys are in your hand

As soon as Ken Berry signed the contract, he thought his search for a house in northern New Jersey was over. The bank promptly approved his loan application, and the appraisal came in right at the selling price. Then a few weeks before the deal was supposed to close, his building inspector discovered that the house's carport extended 6 illegal inches over the property line. "I asked the sellers to fix it," Berry says, "but they refused." After some fruitless haggling, he considered suing, but he figured it wasn't worth getting into a long and costly contract dispute with the sellers. "I was sick of dealing with them. So I got my deposit back and moved on." The sellers were happy to tear up the contract, Berry says, because they stood to profit from his departure. "It was a crazy market with prices heading up every week. I think they realized they could get more if I walked away."

Many people assume that a signed contract guarantees a real-estate deal. But a seller or a buyer who has second

ILLUSTRATION BY TRISHA KRAUSS

thoughts can easily take advantage of the likelihood that the other party would rather walk than fight. Typically, a seller may look for ways to scuttle a deal if a better offer comes along before the sale is complete. Or a buyer may suddenly discover a house he likes more than the one he agreed to purchase. If a contract is broken, the victim can file suit and try to convince a judge to order the sale. But the only certainty about a court battle is that it will be expensive, wrenching and time-consuming. "Suing is an economic decision," says Philadelphia-based real-estate lawyer Vincent Morrison. "In many residential cases, only the attorney comes out on top."

Lawyers charge $150 to $225 an hour to take on a real-estate lawsuit, says Fred Steingold, an attorney in Ann Arbor, Michigan. Lawyers' bills and court fees can quickly reach $5,000. "That doesn't include the delays and aggravation you'll go through," he says. Worse, a protracted lawsuit can tie up a seller's property or a buyer's deposit for months—if not years.

There are speedier and less costly ways to resolve legal conflicts. A buyer or seller can bring a case to arbitration or mediation if the other party agrees. Some lawyers offer the service, called alternative dispute resolution (A.D.R.). Costs for a typical residential real-estate mediation range from $300 to $500 per party, and the process can take as little as two weeks. A.D.R. can work if both parties are operating in good faith. But that isn't always the case.

Ironically, the contract—the instrument that supposedly cements a deal—often becomes the escape vehicle for a reluctant buyer or seller. To avoid going through with the sale, the person wanting out can seize on any minor problem as an opportunity to call the whole thing off. "A seller who wakes up and thinks, 'Hey, the buyer got a steal,' will focus on contract contingencies that the buyer didn't meet," says Steingold. For instance, a buyer's failure to hand over a lender's commitment letter within a specified time gives the seller an out.

A buyer should beware the seller who insists on a contract that provides more ways to kill the deal. Tony Alessandra learned this lesson after contracting to buy a house in La Jolla, California. The contract included Alessandra's contingency that he didn't have to make a down payment on the property until he had sold his own house. But the seller added his own stipulation. If someone else made a higher offer, Alessandra had 72 hours to come up with a new source of financing. "We're within a month of the close when this widow who has just received all the money from her husband's life insurance comes along and makes a higher, all-cash offer," says Alessandra, who had no choice but to pull out of the deal. "That house was literally in our hands, and we lost it," he says.

A seller must also beware the buyer who plays contingency games. Contracts usually give more loopholes to buyers than to sellers, says Steingold. "The typical contract has lots of built-in protections that favor the buyer." For instance, the mortgage contingency lets buyers back out if they can't get a mortgage at a specific interest rate within a given time period. If they get cold feet, they may try to sabotage their own mortgage application. "I've seen a few cases where buyers actually got the bank to issue a low appraisal," says Bob Otsi, an attorney in Boston. "They'll call the appraiser and say, 'Did you know about this terrible roof?'"

A contingency stating that the appraisal must come in at a certain figure can create another convenient out for a buyer. For instance, if a selling price is $150,000, a buyer might stipulate that the appraisal be at least $147,000. "A smart seller can counter that contingency with one of his own. If the property appraises at more than $150,000, he can get out of the deal. When the seller comes back with that clause, the buyer usually drops his," says Tom Tetrell, owner of the Dallas-based firm Prepare Mortgage.

The inspection can uncover other potential deal breakers. When it turns up major and even minor defects, the buyer usually wants the seller to fix them. The buyer might even hire two inspectors to ferret out problems. If a seller refuses to pay for minor repairs, arguments ensue. "When I'm representing a seller," says Joanne Elliott, a partner in Elliott & Associates, a law firm in Park Ridge, Illinois, "I make sure the contract says the inspection is being done purely to identify major defects, not little maintenance or repair items. Otherwise, you can have a buyer coming back insisting that the seller pay for ridiculous, nitpicky things."

Deals can die because of seemingly trivial disagreements about personal property. A buyer and a seller can settle on a million dollar selling price but clash over who gets to keep a $500 light fixture. A buyer should never assume that a fixture or appliance will be included in the purchase price.

"At one closing for a house approaching seven figures, a buyer walked out because the sellers had taken their old-fashioned phone and put in a new one," says Mark Litner, a partner in a Chicago law firm. "It took four hours for the buyer to give in. He realized the phone wasn't worth their $50,000 deposit."

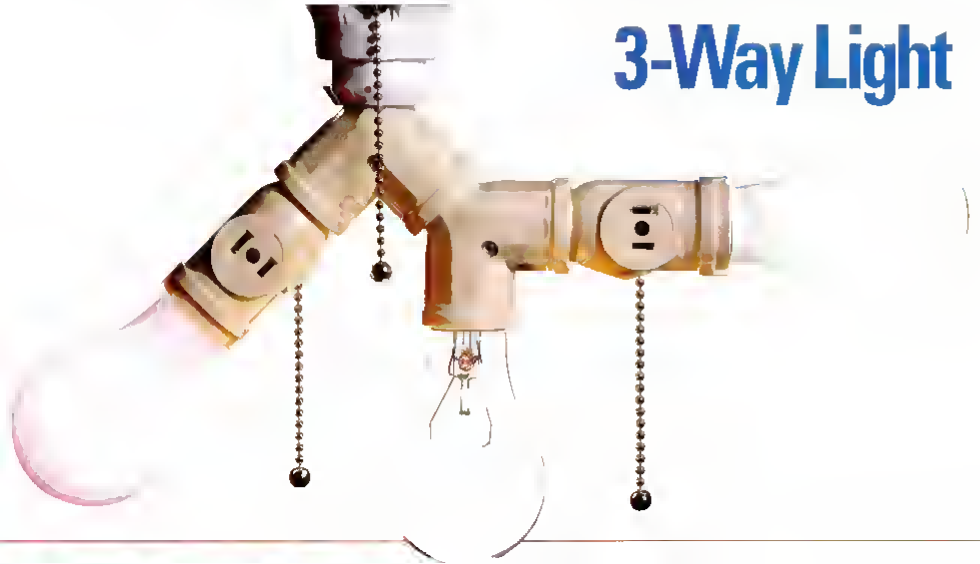
Many real-estate brokers and attorneys echo Litner's advice. "It's better for a contract to be too specific than not specific enough." A buyer and a seller should list everything they believe stays with the house, then reconcile differences up front instead of butting heads when the seller packs up the chandelier. ■

Clause Control

Any real estate contract can be amended to reflect the specific needs and concerns of both the buyer and the seller. Either party can insert—or at least try to insert—additional stipulations: deadlines for specific milestones, contingencies tailored to the deal, clauses that address issues such as personal property and repairs. Here are a few possibilities.

- **A seller who gets an all-cash offer should require the buyer to document his net worth with bank and brokerage statements, preferably within two weeks.**
- **If a buyer insists on a mortgage contingency lasting longer than 45 days, the seller should demand the right to continue showing the house. If the seller gets another offer, the buyer can choose to waive the mortgage contingency and proceed with the deal. Or he can pull out.**
- **Rather than accept the standard contract warranty that appliances and mechanical systems are in "working order," a buyer should modify the statement to read "proper working order."**
- **A buyer should specify the maximum he is willing to spend to fix defects and should make the seller responsible for additional costs. If the seller refuses to pay, the buyer should have the right to withdraw and get his deposit back.**

FOR SOURCES, SEE DIRECTORY, PAGE 184.



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BY DENNIS WEDLICK

THROUGH A DOORWAY THOUGHTFULLY

Don't see a door. See a doorway

Doors built on site, with the same materials used in other parts of the house, give a sense of continuity to a space. LEFT: A sliding barn door made with yellow pine that matches the flooring complements the rustic feel of the passageway connecting a living room with a dining room. BOTTOM: Scraps of siding from a pool house were used to build a plank door between the pool house and a garden shed.

Houses have character, even personality. So it shouldn't be surprising that the fronts of houses inevitably lead one to picture the same sort of human faces easily imagined on the front of automobiles. See: There are the eyes—the headlights. There is the mouth—the grille. On a house, windows look back at us as eyes. The front door becomes a mouth, a cliché for sure but, like most clichés, useful for communicating quickly. At your own house, the imagery can be used to determine whether your front door has good proportions. Have a good look from the curb. If the adjacent windows are vertical and thin, as on most houses, and you have just installed a double front door, like many of America's renovation-crazed couples, is the "mouth" now too fat?

If so, you may have spent too much time shopping for the door and not enough

PHOTOGRAPHS BY MATTHEW BENSON

time considering the doorway. If you are too close, say 3 to 10 feet away, you see only the new double door, which is surely grand, important, even forbidding. It makes a statement. What you may not see at that distance is an entryway, a portal through which people will pass from one space to another.

Doors relate to what surrounds them—their context, whether compositional or spatial. So a door shouldn't be chosen at the lumberyard just because the wood looks good. It should solve a problem. And a double-wide door may or may not be the solution.

The effect of a double-wide door on the front of a house can be achieved without using two doors by flanking a single door with side panels containing windows. An entryway wider than the door itself has presence, and the panels allow additional light to flow into the foyer, providing a good balance between privacy and vulnerability. The system works best if the single door is solid with no glass to see through. Visitors approaching this door are met by a strong wall of wood that subtly commands them to halt until invited to proceed. The door shields the home owners inside, giving them privacy to prepare for the grand moment of opening and greeting. At the same time, the visitors and the home owners can play peekaboo with one another through the windows in the side panels.

Inside a house, a double door can be a more powerful tool than a single door for defining space. Whether in a mansion or a cottage, there can be no mistaking which is the master bedroom when the entryway is two doors wide. The double door leaves no doubt about hierarchy. Conversely, a teenager in quest of solitude is unlikely to appreciate a bedroom with a double door. And double doors can play impressive tricks with the perception of interior space. Centering double doors at opposite ends of a room gives a majestic, wide-open feeling to even a small or narrow space.

The use of traditional, hinge-hung doors is unavoidable in many houses and is often desirable to reflect the period when the house was built. When possible, a swinging door should be positioned near a right-hand wall, where it will simply be parallel to the walkway and unobtrusive when open. A traditional door placed toward the center of a wall limits the usable floor space. A 6-foot-wide set of French doors, for example, really takes up 12 feet of space when the doors swing open.

Doors on untraditional mounts open up a wider array of possibilities inside a house. A door can slide within a wall—so the door disappears when not in use—or outside a wall—like a barn door—avoiding the annoyance caused by a standard door that swings into the room. Although sliding doors that don't disappear are more unusual than those that do, they can work well to break up a monotonous wall. Because a door is usually made of a different material than the wall around it is, a slider can provide contrasts in texture, shape and color. And sometimes it's a waste to hide a sliding door in a pocket because the door itself is so beautifully made.

A pocket door, which slides into a wall, gives the impression that there is no door, making a seemingly open, doorless space into a private, sealed-off space. Double sliding doors that come to a center point from opposite walls can be closed halfway or three quarters or one quarter to provide a different look and a different feeling of whether one is being invited to go through that entryway.

Doubled up, even tripled-up pocket doors can close spans that seem impossibly wide. With doubled pocket doors on each wall, you can enclose a 12-foot-wide entry. With triple doors, you can span 18 feet. When you pull one door out of the wall, it brings the next along right behind it and so on, like a train. The effect can be dramatic. A kitchen, the focal point of a dinner gathering while the meal is being prepared, can be walled off as soon as dinner is served. The dirty pots and dishes will stay out of view until guests leave.

Using doors in unexpected ways creates a sense of variety in a house, a sense of well defined spaces and a sense of visual excitement. But choose your excitement carefully. Openings of a certain size can also be out of character with certain styles of architecture. When remodeling, you are likely to establish hybrids, so you're already treading on experimental ground. And never forget that not all doorways need doors. ■

*Doors can separate spaces without sacrificing light. **1.** A 12-foot-wide entryway with pocket doors floods a basement recreation room with sunshine from a skylight above the stairway. **2.** An 8-foot-high door's glass panel lets light into a mudroom but doesn't let messes on the floor be seen from outside. **3.** Flanking the French doors, a pair of 6-foot-tall double-hung windows create the effect of a glass wall, making the outdoors flow in.*

FOR SOURCES, SEE DIRECTORY - PAGE 193

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PHOTOGRAPH BY SANNY TURNER

BY BRAD LEMLEY

the perfect countertop?

Not only does poured concrete look this good, it will last forever

Until you've seen one, a countertop made of concrete seems an odd proposition. Countertops are one of a kitchen's most visible elements, and on the building-material glamour-meter, concrete ranks just above the wax ring that seals a toilet to its drain. We're happy to have good, gray concrete undergirding our houses, but troweling it atop expensive Euro-hinged cabinetry seems like some kind of misbegotten design statement, industrial chic pushed to ugly excess

Massive and stonelike yet smooth and soft-edged, the 3-inch-thick island countertop provides a pleasing contrast to the sleek white cabinets that support it.

Yet concrete is in many ways the ideal countertop material: durable, seamless and, because it takes dye beautifully, more aesthetically versatile than stone, tile, solid surface or butcher block. Concrete can mimic mineral slabs ranging from veined marble to lustrous obsidian, or it can strike out in more daring directions—a maroon island shaped like a football, perhaps?

Carol Orr of Dallas, Texas, wanted concrete's massive, textured presence after ogling some countertops in upscale interior design magazines. "We like unusual things. Everyone is doing granite—it's just so

PHOTOGRAPHS BY DANNY TURNER

While Eusevio Martinez, left, dumps concrete into the form, Manuel Mercado quickly spreads it over the plywood base. A small round sink and gas cooktop will occupy the two cutouts, and when it's done the 3-by-7-foot countertop will weigh 700 pounds, a load that the factory-built cabinets can easily carry.

'me too,'" she says. "This was definitely original."

So Orr commissioned Manuel Mercado of North Texas Bomanite, an architectural concrete company, to begin the weeklong process of installing 140 square feet—more than a ton—of concrete in the galley kitchen of her rambling contemporary.

When possible, Mercado makes countertops in his company's workshop—where a slopped dollop of concrete doesn't offend—and brings the finished slabs to his customers' kitchens. But when, as at the Orrs' house, the countertops must be longer than 10 feet or have cutouts for sinks or a cooktop, he "just can't safely move them," says project supervisor Fred Bailey. "They crack too easily. You've got to make them on-site." With the sinks, cooktop and original laminate countertops already removed, Mercado begins by carefully draping the hospital-white cabinets and covering the bleached-wood floors with billowing yards of thin plastic sheeting.

Concrete countertops start with a form, and a form starts with a bottom. To make one for the kitchen's center island, Mercado and his assistant, carpenter Eusevio Martinez, saw a sheet of ½-inch exterior-grade plywood to cover the cabinet precisely, attaching it with 1¼ inch drywall screws.

Next, the men screw a 1-inch thick spacer strip just below the plywood, and to this they screw 1-by-4 boards to serve as the form's sides. This configuration will mold a thick overhanging lip to hide the unsightly plywood edge. "No matter where you look, you are just going to see concrete," says Mercado with a grin.

A side view of the concrete form, right, reveals how long screws anchored by small wooden blocks will prevent the walls from yielding to the pressure of wet concrete. When the form is about half filled, Mercado and Martinez, below, press lengths of galvanized steel reinforcing mesh into the concrete.

The wet concrete will press urgently on the form walls. To reinforce them and stanch potential bulges or blowouts, Mercado screws down dozens of small wooden blocks, each about 1 inch back from the edge of the plywood base. Then he drives 3½-inch screws through the 1-by-4 sides and into these little blocks. "That will make them plenty strong, no problem," he says as he dabs axle grease on each screw to make it easy to remove once the concrete sets.

The island countertop features abundant curves swooping around a circular sink and rounding off two of its corners. To form the walls for these sections, Mercado manhandles flexible ⅛-inch hardboard around each curve, fastening it to the spacer strip.

After two days of patient, exacting formwork, Mercado mixes the concrete. He dumps his recipe—5 gallons type-one Portland cement, 15 gallons sand, 1¼ gallons ⅜-inch gravel—into a portable mixer in Orr's driveway. To this, he dribbles in a mixture of 5 gallons water and 1 gallon acrylic concrete bonder, periodically plucking out a handful of the wet mass. When he can squeeze it into a neat ball that doesn't crumble when pressed, he stops pouring and nods.

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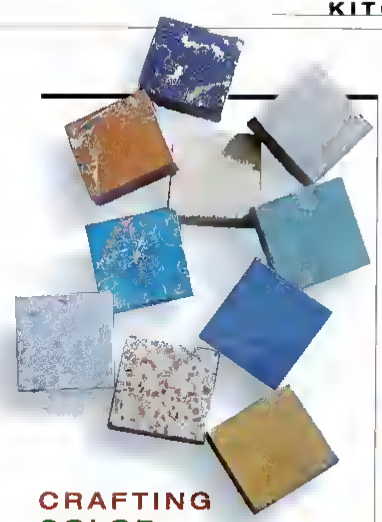

CRAFTING COLOR

For 20 years, San Francisco artisan Buddy Rhodes has exuberantly shaped concrete into not only counters but also decorative globes, cones, pyramids, finials and, as Rhodes puts it, "other acts of the imagination." For all of his creations, the color of the concrete matters as much as its shape.

He begins with white Portland cement, which is made from a type of limestone that's free of discoloring impurities. "The white takes color better than the typical gray cement," he says. "You get a true color, not toned down." He buys 55-gallon drums of liquid pigment and mixes it into the water that moistens his concrete. "Liquid pigment gives a uniform color," he says. "If you use a powder, you can get marbling."

To create a striking veined effect, Rhodes uses special molds that leave V-shaped grooves in the surface of the colored concrete. After it cures, he strips the molds and fills the grooves with concrete tinted with a contrasting pigment. When executed in wild tones such as violet or lime green, the result suggests stone hewn from a rock-candy mountain.

Rhodes also specializes in terrazzo, made by mixing marble and glass chips in wet, colored concrete and grinding them smooth. "You can do a lot with concrete. People build whole cities out of it," he says. "As wood gets scarcer, we'll see more of it all the time."

"You want it stiff," he says. "This is just right."

The bonder Mercado added is a vital ingredient. Concrete shrinks as it cures, and it tends to crack at stress points such as the inside corners of cutouts. Contractors usually cut seams into sidewalks and slabs, aiming (with varying success) to direct the crack along the seam's bottom, where it won't be seen. But Mercado's goal is more ambitious: a joint-free, crack-free countertop, which the bonding agent ensures, he says. "It's good stuff. No cracks, you'll see."

A wheelbarrow-load at a time, Mercado and Martinez muscle the mix inside and shovel it into the form. They have just 30 minutes before it begins to set—harrowingly brief for a neophyte but no sweat to Mercado, a concrete man of more than 10 years' experience. "Plenty of time," he says, humming softly to himself as he pushes the mixture into every corner with his foot-long float. Periodically, he bangs the form's sides with the end of a trowel to remove trapped air and fill voids.

Contractors typically reinforce larger-scale projects such as patios and driveways with 6-inch-square steel mesh. In pursuit of a no-cracks countertop, Mercado employs the tighter network found in galvanized-steel stucco lath, also called diamond mesh because of its grid of ½-inch diamond-shaped holes. After filling the form about halfway and smoothing the concrete, he and Martinez cut the lath with tin snips and plop it down in overlapping sections. To reinforce the 3-inch-wide strip of concrete at the front of the cooktop cutout, Mercado inserts a length of angle iron sized to extend 3 inches beyond each corner, and immediately buries it with more concrete.

Like sowing carrot seed, sprinkling on the colorant requires a delicate touch to distribute it evenly. After Mercado covers an entire counter, he works the powder into the concrete with a float.

After filling the entire form with lumpy concrete and troweling it flat, Mercado and Martinez use a 4-foot level to screed the gray mass level with the walls, then laboriously pilot their floats across the top until the sound changes from a soft swish to a rasping scrape. The final forming step: With an edging tool, they cut a slight radius into the concrete's top edge. "If you leave that sharp," says Mercado, "it's going to crumble."

Back at the mixing stage, Mercado could have added colorant and given the concrete a uniform hue from top to bottom. But for the textured, mottled look Orr specified, Mercado and Martinez delicately sprinkle two light-colored powders on the firm-but-still-wet surface—one from a bag labeled "beige cream," the other, labeled "sand." The men take up their floats again and work the surface to meld the two shades.

While the island slab hardens, they turn to the forms atop the cabinets along the walls, repeating the same process. Confident as he is, Mercado never pours more than about 30 square feet of countertop at a time, dashing like a vaudeville plate-spinner from one form to another would yield frayed nerves and, possibly, flawed countertops.

The next day, with the slabs hardened and the forms stripped, Mercado begins finishing the sides. He first paints them with the 50/50 mix of water and bonding

STILL LIFE: MICHAEL GRAM

(Mom was right.)

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agent he used to strengthen the slabs, then fills any voids with a wet batch of gravel-free Portland cement. Next, he trowels on a paste made from equal portions of the two colorants and finishes by wrapping his hand with plastic sheeting, dipping it in water and gently rubbing and smoothing all the edges. After waiting two days for the concrete to cure, Mercado lightly sands the tops and sides to remove stray nubs and whorls, then seals them with two coats of low-gloss water based acrylic sealer.

With the sinks and cooktop reinstalled, Orr is delighted. "It has an unfinished look—thick, massive and rough," she says. "It's just what we wanted to contrast with the slick look of the cabinets." And after a couple of weeks cooking, she also finds the countertops eminently practical. "I didn't want tile, because when you spill something like red wine in the grout, it's very hard to get the stain out. But you can't hurt this stuff. I spilled Worcestershire sauce on it the other day—wipes right off."

Raw concrete's relatively low price doesn't mean the countertops are cellar-slab cheap. While material costs are minuscule—Mercado estimates they were less than $300 for Orr's kitchen—the requisite skilled labor ratchets up the final price. Orr says suppliers quoted installed prices of about $100 a linear foot for both solid surface and granite; she paid $77 for concrete. Total cost: $6,200.

"Price wasn't really the issue. It was the effect I was after," she says, surveying her new slabs. "It is absolutely the coolest look." ■

When home owner Carol Orr found that her new countertops were 1½ inches higher than her old plastic laminate ones, she uttered her sole complaint: "I'm 5-foot-3, so I didn't need them to be any higher." But her husband, Bruce, who is over 6 feet tall, "thinks they're great." Because it required such a complex form, the contractor opted to make the kidney-shaped breakfast bar, above, in his shop.

For sources, see DIRECTORY, page 91

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BY PENNY MOSER

can a dishwasher be worth $1,000?

The answer may depend on whether you grew up in Stockholm or St. Louis

The 5 million Americans expected to buy dishwashers this year may be surprised, if not confused, by the range in price and sophistication. The hundreds of models manufactured by 9 U.S. and European companies (and sold under dozens of brand names) run from Sears's $188 no-frills Kenmore to Miele's $1,799 computer-programmable Novatronic. One point to consider: Over time, savings in water and energy might pay back the extra cost of a more efficient unit.

I hate doing dishes. If I had to choose between my dishwasher and my washing machine, I'd be down at the nearest river, beating my clothes on a rock. Or at least at a Laundromat. There are no dishomats.

So imagine my wonder when I recently found myself on my knees in a local appliance store, nose-to-spray-arm with an elegant European dishwasher. I'd gone in to buy bags for my German-made Miele vacuum cleaner when I stumbled upon Miele's machine.

On the outside, it's the same size as my own dishwasher, but the inside is much taller. I could put big dishes on both racks. It has a gleaming stainless-steel tank so cleverly plumbed that the three spray arms don't need a space-eating central tower. The store's owner, who has one at home, pointed out that it has a built-in water softener filled with kosher salt, to reduce spotting, and an in-line heater that can cook the wash water up to 170 degrees Fahrenheit. There is no exposed heating element on the bottom. I

PHOTOGRAPHS BY MICHAEL GRIMM

Now built in New Bern, North Carolina, an Americanized dishwasher from Germany's vast Robert Bosch Corporation is our sacrificial lamb, taken apart and examined piece by piece to determine what makes it so costly.

can't tell you how much plastic water has committed suicide on that coil in my dishwasher. It even killed the lower rack's roller feet.

But the piece de résistance has to be the silverware tray. Instead of the knives, forks and spoons standing together on their heads or toes, each individual piece has its own slot in a flat tray that snuggles up against the top of the machine. When the tray is filled, you could look down upon 104 pieces of silverware lying in state. I guessed this would take care of that small but constant problem I have with my dishwasher of finding two spoons stuck together by a wad of 9 Lives Super Supper.

The Miele would do its work at a whisper-soft 47 decibels and would use about half as much water and energy as my current machine does. But two things kept this from being an impulse purchase. First, a $1,400 price tag. (Mieles retail from $999 to $1,799.) Second, my poor old Kenmore, though dying slowly after more than a decade of hard work, is not yet dead.

Several times during its cycle, my Kenmore sounds like a Boeing 747 taking off. When it fills, it makes some of my pipes sound like distant artillery. The springs on the door broke long ago, so it just falls open, often kneecapping the unwary. Yet the old Kenmore washes on, and it washes well. How could I justify looking at new dishwashers? Easily. I just thought about our troubled oceans and a Cracker Jack box full of coal.

My power company once explained that each kilowatt-hour of electricity I use burns about a Cracker Jack boxful of coal. So when I buy appliances, I picture Cracker Jack boxes of energy and pollution. Then there's the water. The most efficient dishwashers I found were the Swedish Askos ($700 to $1,200, depending on the model). According to U.S. Department of Energy tests, they use only 344 to 377 kilowatt-hours of electricity a year and clean a big load of dishes with as little as 4.6 gallons of water. Mine uses 10.9 gallons and about 850 kilowatt hours. If I traded my dishwasher, I'd save 500 Cracker Jack boxes of coal, or about $33 a year. And I'd save 2,000 gallons, or $12 worth, of water. Asko says that using half the water means using about half the detergent, which I figure would bring my annual savings up to about $60, which would only slightly ease the pain of the up-front price. But it's more than the money. It just stands to reason that, if America's 57 million household dishwashers used half the water and half the phosphate filled detergent, we could feel good about ourselves.

We could also talk on the phone in the kitchen when the dishwasher is running. This is where the Eurowashers get kind of sexy.

Miele claims that, at 47 decibels, its top-of-the line model is "quieter than the sound of boiling water." Bosch, a German entry now made in America ($580 to $950), says its best model operates at 48 decibels—I guess that would be water boiling slightly faster. Asko doesn't use decibels, but its reps say that, when they collared 150 people in a Dallas shopping mall and got them to listen to a variety of machines, 146 picked Asko as the quietest.

Asko says that noise-muffling material makes up almost a third of the weight of its machines. A quarter inch of black bitumen (as in automobile undercoating) covers the outside of the stainless-steel tank, and a ½-inch felt pad wraps around that. Bosch also uses bitumen and felt as well as encasing the whole unit in another coated metal box.

It is true that I could barely hear any of these dishwashers running. I was amused when an Asko rep told me that the company now makes an "invisible dishwasher," one that can so perfectly match kitchen cabinets that it's impossible to tell it's there. A dishwasher I couldn't see and couldn't hear. I may not be that covert about my dishes.

In fact, I'd be hard-pressed to choose between the Swedes and the Germans. After all, what can you say in a world where dishwashers have their own Web pages? (Asko's page dispenses a little Swedish history. Bosch lets browsers download an extensive service manual.) And I must consider that each and every Asko is assembled by a single worker. But then with a Bosch, if I want to wash something very large, I get my own water-diffusing attachment: *der Backblechsprühkopf*.

I suppose having a smart dishwasher has a certain cachet. Miele's can monitor water levels and spray-arm pressures and let me know if, say, something has swished askew and blocked the spray arm. The control panel on its top-of-the-line unit even has a computer port so that someday, if dish soap chemistry or dishware material changes radically, I could ask my Miele representative to design a new wash cycle for me.

The Bosch would send my dishwater through an optic sensor and, if my dishes weren't too grubby, would decrease the already meager need for water. But herein lies the big "if" for me. My dishes are grubby. My Kenmore has had a hard life. I do not rinse. I barely scrape. While this psychologically challenges some people, it shouldn't—unless a machine is old or infirm—challenge the dishwasher at all.

You see, all good American dishwashers have food grinders in the bottom. Unless I have a really bad dishwasher day, when a chicken bone or a corncob gets tossed in, my machine eats everything. It just goes away, I suspect, during the 747 part of the cycle. If I were to throw a bowl full of mashed potatoes into my loaded

Kenmore, I know that, in the end, the dishes would be done and the potatoes would be gone.

The European dishwashers also take the potatoes away, but they probably wouldn't like those nasty little shredded carrots that stuck to the dressing on the bottom of the salad bowl.

One of the reasons these Europeans use so little water is that they have very fine filtration systems working over the water as they cycle. Bosch even has two little pumps instead of a single big one, so that the pump that drains also keeps food bits out of the pump that circulates.

While all the manufacturers (and probably even customers who are better scrapers than I am) say that the coarse strainers don't need cleaning very often, the fact that they're there means they have to be cleaned sometimes, and I don't want to do that.

I don't know what I want to do. I now have three brochures with dozens of explanations of the best features of each elegant

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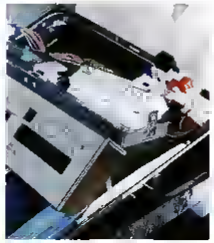
Little hunks of black rubber block some of the noise generated by the motors that drive the machine's two water pumps.

TAKING IT APART 1

To reveal the guts of his company's machine, Bosch product manager Michael Marsollek removes its outer casing and pulls back the thick cotton insulation to reveal the sound- and vibration-dampening layer of bitumen (a type of asphalt) bonded to the outside of the stainless steel tank.

The dishwasher's computerized brain thinks its way through six different cycles. During any cycle, sensors may tell the control center how dirty and how hot the wash and rinse water is, so microprocessors can adjust the length of the cycle and how much water must be used.



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machine. Yet in my heart, I remember my G.E. Potscrubber of yesteryear. It had two buttons and was not smart. But it did yeoman's service for almost 20 years until one day, with the motor still running, the bottom fell out.

I suppose what I'd really like is the capacity, efficiency and quietness of the Europeans plus the food disposal and price of an American model.

At the moment, I'm keeping an eye on the American lines, which are quickly high-ending up toward the Euros. I'm thinking that, in a year or so, someone here or abroad will make my dream machine.

I have a little time left. My lower rack is rusting out, but I recently discovered that, when my dishwasher starts, I can stop the sound of the artillery fire by opening the hot-water tap in the upstairs bathroom.

This is not a perfect solution to old Kenmore's problems, but—after all—the motor still works, and the dishes are clean. ■

TAKING IT APART 2

Removing the bottom pan shows how most of the moving parts are crammed into a space just 6 inches high, which leaves room for a washing tank that's tall enough to handle 10-inch plates and stemware on the top rack, along with 12-inch plates and big pots on the bottom.

With all the plumbing organs and electrical veins and arteries pulled away, the naked dishwasher shows itself to be nothing more than pumps, sumps and spray arms.

CLEAN HOT WATER

WATER HEATER

No matter what the temperature of intake water is, a 1,200 watt heating element in a stainless-steel sheath quickly brings water up to 161 degrees Fahrenheit. A button-shaped sensor monitors temperature and tells a microprocessor to switch the heater on and off.

THREE FILTERS

As water circulates, an all-plastic basket, a flat stainless steel filter and a cylindrical ultrafine filter capture everything from big lumps to tiny particles, which allows the machine to use water over and over and to do a full load with just 4.4 gallons.

FOR SOURCES, SEE DIRECTORY, PAGE 143

The all-new Mazda B-Series Trucks.

The B4000 4x4 SE Cab Plus (shown) comes with: • 4.0L V6 engine • 4-wheel ABS • Power rack-and-pinion steering • Vacuum-operated hub-lock system • Alloy wheels with P265/75R15 white-letter tires • Towing Package • Fog lights • Dual air bags with passenger's-side cutoff switch • AM/FM/cassette stereo with CD • Cruise control • A/C and more.

*When properly equipped. †Equipped with the optional Comfort Plus Package and graphics delete option.

For those of you whose sense of adventure isn't bound by convention or commuter lanes, we present our newest family of powerful Mazda Trucks. Built longer, wider, and stronger, they'll tow close to three tons* without ever breaking a sweat. And, with all the rugged performance of the new double-wishbone front suspension and available shift-on-the-fly four-wheel drive, these redesigned Mazda Trucks are bold enough to run over what they don't run through. Then again, anything less wouldn't be worth owning.

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mazda

BY JOE CARTER

where's the good stuff?

In search of a well made kitchen cabinet

Kitchen showrooms are emporiums of grand illusion. The floors always glisten, countertops are uncluttered by coffeemakers and the cabinets—wow! The cabinets are always perfect. No scratches, no dings, none of the 3-year-old's favorite stickers, no dishes cramming shelves. The cabinets are stained in the latest colors endorsed by shelter-magazines, floated under 16-foot ceilings (so you'll never notice how tall they're not) and lit by several thousand watts of halogen. When the doors swing shut with resounding thumps and the drawers slide to a firm stop, you're sold. Too bad. You think you bought furniture that will last a lifetime, but you probably got dressed-up orange crates that will last barely a decade. Top-quality kitchen cabinets *are* made like good furniture, but even the most devoted watchers of the Food Channel don't know what to look for. Worse, what to look for is usually hidden. So we ordered up a finely crafted—but unassembled—base cabinet made by a small family-owned company that has only one line of cabinetry—the good stuff. Rip out these pages, and take them along when you go shopping.

THE WELL BUILT CABINET *FACE—all pieces visible from the front of a cabinet. The wood used on the face of a quality cabinet shouldn't have knots, pitch pockets, sanding scars, grain irregularities or color differences.* **1.** *Face-frame stiles and rails are joined with long tenons (protruding wood tongues) and deep mortises (the slots into which tenons fit). Where two pieces of wood meet in a joint, the line between them almost disappears.* **2.** *Drawer fronts are cut from a single piece of solid wood.* **3.** *Flat door panels are made from solid pieces of wood. END PANEL—the side of the cabinet exposed to view.* **4.** *Solid wood is chosen for similarity of grain and color.* **5.** *Frame pieces have mortise-and-tenon joinery; assembled panel is attached to the carcass (a plywood box) with screws driven from the inside out. DRAWER—all sides are made from hardwood ⅝ inch or thicker.* **6.** *All sides are routed with a groove that supports drawer base.* **7.** *Joints are dovetailed at all corners. CARCASS—the plywood box that forms the cabinet's interior, seen here lying on side panel.* **8.** *Side and floor panels are ½ inch minimum thickness.* **9.** *Plywood shelves are at least ¾ inch thick.* **10.** *Cabinet floor and back fit into a routed side panel.*

PHOTOGRAPHS BY MICHAEL GRIMM

DETAILS THAT MAKE A DIFFERENCE

1

2

3

1. TUNABLE HINGES
Whether visible or hidden, a hinge should be not only strong but also adjustable so that doors can align with the surrounding face-frame

2. FLOATING PANELS
The frames around panels on the cabinet doors and on the exposed side of the cabinet have deep grooves. Panels aren't glued or fastened into the grooves, which allows them to expand and contract with changes in temperature and humidity without cracking or pushing the frame apart. Tiny pads keep the panels centered.

3. DRAWER SLIDES
A drawer supported by two side-mounted slides is much stronger than one that runs over a single slide centered underneath. The quietest slides run on nylon bearings. A good slide can carry loads of at least 75 pounds and will allow a drawer to open fully

4

5

4. FRAME-TO-CARCASS JOINTS
A strong connection between the carcass and the face frame (the five narrow pieces of wood that surround the drawer and the doors) is a mark of good craftsmanship. At the bottom corner of the back of the face frame, the vertical piece (the stile) has a wide groove, which locks onto the side panel of the carcass. The narrow groove across the horizontal piece (the rail) lines up with an identical groove in the floor of the cabinet. Biscuits glued into these grooves join the rail to the cabinet floor

5. SHELF LOCKS
Shelves should be adjustable and supported by metal brackets, not plastic ones. To keep the shelf from wandering, a locking device such as a plastic retainer plugs into an adjustment hole above.

FOR SOURCES, SEE DIRECTORY—PAGE 105

Don't buy a new bath until it passes the Tommy Taylor Torture Test.

Ordinary Material Cast Acrylic

With our free Bath Buying Guide, you'll learn why cast acrylic clearly outshines ordinary materials

Before you plunge into buying a new tub or shower, make sure it can withstand the rigors of family life. Call today to learn why baths made of cast acrylic can handle torture far better than those made of ordinary materials.

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8B7

BY JEANNE HUBER

bold basins

Who knew you could have this much fun in a bathroom?

PHOTOGRAPHS BY MICHAEL GRIMM

Once, a bathroom sink was just a bathroom sink. In today's style-conscious world, it has become a vessel or a basin, even a fashion statement. Dennis Wedlick, a New York City architect, says home owners should feel free to pick a sink that's different from the one marketed with a specific tub or toilet. "Often these coordinating 'lines' are just somebody else's idea of what looks good together," he says. "I think it's more essential for the faucets, towel racks and other hardware to match." Sinks and faucets should also be chosen in tandem to ensure that the water will land close to the drain. A spout that extends too far will crowd the bowl and reduce its usefulness. If the spout is too short, water that hits the curved side of a bowl can shoot right out and right onto the user, especially in a shallow sink. "It just goes down one side of the hill and up the other," says Jim Krengel, a kitchen and bath designer. ■

WALL MOUNTED

A retro look plus a little bit of counter space will add dimension to a traditional-style bath. 35⅛ by 21 inches

This delicately sculpted and decorated shell shape belongs in a bath with country decor. 17 by 15½ inches.

The steely industrial look is right at home in a high tech house or a funky artist's loft. 15½-inch diameter

A half-sphere, crisp and sophisticated, stars in either modern or minimalist settings. 22½-inch diameter.

Spare and elegant, a simple oval goes with almost any contemporary-style bathroom. 23¾ by 17 inches

With legs framing the front, this attention grabber recalls the look of antique furniture. 42 by 22½ inches

PEDESTAL

Like a black dress with jewelry, simple lines dress up or down depending on the faucet. 19½ by 17 inches

Porcelain and wood bring high style, but no soap dish, to a bathroom built for showing off. 19½ by 22 inches.

A boldly modern take on the classic pedestal features a generous rim and chrome legs. 24½-inch diameter.

Shaker gets an update in a bowl and base that evoke 19th-century pre-plumbing fixtures. 29 by 23 inches

Though petite, this pedestal embodies all the style of a traditional, full-size version. 19⅛ by 15¾ inches

Echoing a laundry tub look, the basin is deep enough for hair-washing or baby's bath. 33½ by 21¾ inches

COUNTER

Glazed ceramic offers the glint of brass but is easier to keep clean than the real thing. 20½ by 16¼ inches

Thanks to its wide rim, a large basin with a deep oval bowl looks even larger than it is. 24 by 19½ inches.

A stepped oval of nickel-silver adds gleam and glitter but will work best in a low-traffic bath. 16 by 22 inches.

A scalloped rim and embossed bowl demand a bathroom with formal, if not elaborate, decor. 20½ by 16 inches.

An eight-sided basin would be worthy of any miniature Monticello or Mount Vernon. 20 by 16 inches

This classic circular bowl is small enough to tuck into a corner of a tiny powder room. 13-inch diameter

FOR SOURCES, SEE DIRECTORY—PAGE 180

THE PERFECT DINNER PARTY REQUIRES HOURS OF PLANNING AND PREPARATION. HAVING DECENT APPLIANCES DOESN'T HURT, EITHER.

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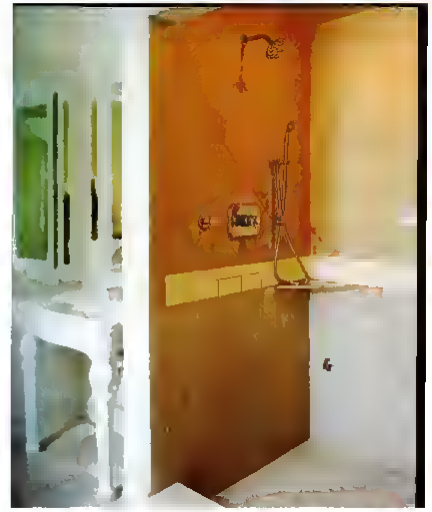
BY STEPHEN WILLIAMS

Jurassic lark

Floor-to-ceiling limestone makes showering an adventure



Limestone tiles, set on a diagonal on the upper walls and in a running bond pattern below the ceramic-tile banding, sheathe the 4-by-4-foot shower stall in a renovated master bath. Not just water will cascade into this shower. A control installed above the banding on the back wall prompts a generator to pump steam through the small fitting below.

In the close confines of a roughed-out shower stall, *This Old House* tiling contractor Joe Ferrante grips a thin piece of limestone in one hand and, with a notched trowel in his other hand, spreads off-white mortar over the cement board sheathing the enclosure. He has made the limestone into a temporary serving dish for the mortar; the right tool, a sheet-metal square called a hawk, is out of reach, but the back of the stone works fine. "Hey, this is probably the world's fanciest hawk," Ferrante says, eyeing the $14 slab.

After coating a few square feet, he puts the fancy hawk on an upturned bucket and picks up a fresh piece of limestone to trowel mortar on its back as if he were spreading jam on a huge piece of toast. Pressing the tile into place, he scans the surface.

"Look at that," he says, pointing to the fossilized squiggle of a Jurassic seashell embedded in the limestone. "That's a nice-looking little creature."

After 29 years setting stone and tile, Ferrante still gets a kick out of finding signs of life from oceans long ago. And he gets to do it more and more often these days as clients turn away from slick marble and granite surfaces,

PHOTOGRAPHS BY KELLER & KELLER

With a ¼-inch notched trowel, Joe Ferrante spreads thin-set mortar on the ceiling, far left, then places a cut to fit limestone tile, left. Although he uses thin-set mortar, he says medium-bed also works well for a ceiling.

opting instead for the colors and grains—not to mention shells, coral and other fossils—that only limestone offers.

"Limestone is just starting to click in," says Ferrante. "It's a beautiful material to work with and, when I see all the life forms, I feel a connection to something that has gone on long before me."

He is installing these particular fossilized sea creatures in Brookline, Massachusetts, in the master bathroom of a mid-19th-century house under renovation. "The house was updated 10 years ago but with junk," says project architect Robert Zverina. Improvements include the new master suite and its 14-by-6½-foot bathroom. The room has many features that have become de rigueur for an upscale master bath: a reproduction Edwardian sink, a claw-footed tub, partitions screening the toilet and bidet. And the shower hooks up to a steam generator. Although the home owners, a married couple, initially disagreed about steam for the shower, they quickly agreed on using limestone to cover the shower's surfaces.

"They'd already had a marble bathroom and wanted a change for the new house," says Zverina. "There is a certain softness to limestone that granite and marble don't have." They chose French limestone for the shower: blue for the floor and lower walls, beige for the upper walls and ceiling. They even chose a limestone shower seat, shelf and threshold. (A decorative band of cream-colored accent tiles is the only ceramic element of the shower.) Zverina drew a detailed plan of how to cut and place the limestone tiles and, after waiting a few weeks for a delayed delivery, Ferrante could finally begin.

When he first came to the job site, Ferrante was pleased to find that the carpenters had framed the shower walls flat, square and plumb. The electrician had installed a waterproof recessed light in the ceiling, and the plumbers had put in a copper floor pan that fit perfectly into the 4-by-4-foot stall. The pan's 6¼-inch high sides were soldered at the corners, as was the brass drain to a cutout at the center; copper nails secured the unit to the framing. Some builders use pans made of rubber, but Ferrante thinks copper's higher price—about $500 in this case—is well worth it. "I've torn out 60-year-old stalls, and the copper pan is still good," he says.

Bringing the materials to the second floor is the toughest part. First, Ferrante and his brothers, Chuck and Mark, have to wrangle 110-pound panels of cement board up the winding staircase without disturbing the painters priming the balusters. Then come 10 cartons of limestone weighing 180 pounds and thick, heavy limestone slabs for the seat, the shelf and the threshold. Finally, some sand, the grout, a few buckets of latex and the wet saw to do all the cutting arrive.

Ferrante begins by filling the stall's stud cavities with fiberglass insulation to muffle the sound of the shower. He covers the studs and insulation with 4-mil plastic sheeting, a moisture barrier.

Tile contractors typically install 3 by 5 foot cement board panels behind tiles, but Ferrante uses 4-by-8-foot panels for this job because they create fewer seams. "It's unlikely that moisture will pass through a good tile job, especially as you get away from the floor area, but you can never tell what kind of abuse the stall might receive over the years," he says.

After cutting and installing the last panel, Ferrante brushes a thick, syrupy sealer onto all the seams, then tapes them with 3-inch-wide fiberglass mesh. The cement board provides a permanent substratum that will not rot or deteriorate on the off chance that water gets behind the tile. Coating the seams ensures the panels are smooth. For added protection, Ferrante also skim-coats every inch of panel with a layer of mortar.

Now Ferrante is ready to cut the tiles according to Zverina's design. To make the running-bond pattern for the lower walls, he sets the wet saw whirring and starts to cut the 12-by-12-inch blue

Ferrante guides a limestone tile under the toothless diamond-rimmed blade of a wet saw, right. He pushes slowly through each cut, especially in the final ¼ inch, to minimize the chances of cracking the tile.

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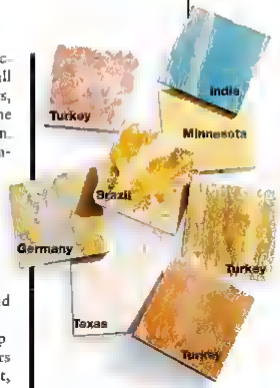
tiles in half, creating 6-by-12 inch rectangles. The noisy saw overpowers all other distractions and, after a few cuts, he becomes totally absorbed as if the simple, repetitive work were meditation. A small pump bathes the saw's diamond-rimmed blade in cooling water, and Ferrante moves slowly and purposefully to minimize the chance of a chip-out. "Still, no matter what a person does, he'll make mistakes." When choosing limestone for this job, he ordered about 7 percent extra as insurance against bad cuts and brittle tiles.

Mixing the mortar is the next step. Until about 30 years ago, tile installers used a soupy mix of portland cement, which they called dope. It worked, but it didn't have much adhesive power. Before the mortar dried, tiles could slip or fall unless they were held up by poles. Modern ingredients such as finer sand and bond-enhancing additives make mortars far more tenacious. Tough thick-bed mortar, made of portland cement and sand, provides a good first layer for walls and floors. Medium bed thin-set and thin-set mortar, both bonding cements, are "so similar the average person couldn't tell the difference looking at them," Ferrante says. Purchased by the bag, these two mortars combine on site with either water or additional bonding agents. Medium bed thin-set, a good option for walls, can be applied up to ¾ inch thick to flatten an uneven surface.

Ferrante mixes up a bucket of medium-bed thin-set mortar with his trowel and pours in admix (a performance-enhancing chemical substance) instead of water. "I like this stuff," he says. "It makes the mortar a little more flexible after it dries, so there's even less chance of a tile coming loose." Then he loads up a ¼-inch notched trowel, spreads the mortar over about two tiles' worth of wall and, as always, over the back of a tile.

"Back buttering enhances the bonding and helps get the tile in flat, so it lines up with the next one and there's no lippage or uneven surface," Ferrante says. "Some tile guys say buttering is a waste of time. But they've got a different agenda: laying more per hour."

He pushes and twists the tile onto the wall to coax out air pockets that might weaken the bond or make it set unevenly. Then he taps the center of the tile with a rubber mallet for the final fit.



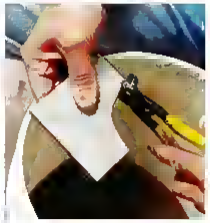
GLOBAL ROCK

Quarried around the world, limestone comes in a rainbow of colors, belying the common perception that it's just sand-colored rock from Indiana. "There are literally hundreds of colors and patterns of limestone on the market now, at prices that range from about $6 to more than $12 per square foot for 18-by-18-inch tiles," says Dale Yanda, manager of Marbelle in Anaheim, California. He sells mostly stone with a honed finish that is flat to the touch but still gives the impression of depth. Travertine limestone has a pockmarked finish from the water that percolated through the stone as it formed. Polished limestone isn't used very often because it looks like plastic. Since limestone is permeable, it is often sealed with a water repellent.

Some of the finest tiles come from France and England, where limestone has covered floors and walls for centuries. All limestone is soft compared to marble but is still durable enough to handle tap dancers on a patio or a falling blow-dryer in the bathroom. However, pots and dishes can leave rings and stains even on sealed limestone. But bathroom water and steam won't dramatically discolor the surface of the stone. It will just age slowly, developing a darker patina.

After Ferrante runs two perimeters of mortar—at the drain and the edge of the shower floor—he measures to ensure the slope is consistent so it hurries water to the drain.

He nips a curved cut so the tile will fit snugly around the drain. Small, 4-inch-square tiles engage the pitch of the floor and provide better traction because of the extra grout.



A combination of medium-bed thin-set troweled on top of a layer of wet thick-bed mortar makes a solid base to handle foot traffic and a bathroom's ever present moisture.

He uses a rubber trowel to smooth a layer of sandstone-colored grout over the floor tiles, letting the grout set for 10 minutes before he cleans the surface with a damp sponge.

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"It will break if you hit it too hard," he says

Zverina's design calls for a diamond pattern on the upper wall. Ferrante sets 12-by-12-inch beige tiles on end to create the pattern, cutting tiles in half on the diagonal as needed to complete the design near the corners, ceiling and ceramic banding.

When he reaches the ceiling, he keeps mixing fresh thin-set to a mayonnaise thickness, spreading it over the backer-board, buttering and pressing tiles in place. Certain of the cement's strength, he doesn't think twice about letting go of a 3-pound tile over his head.

The floor comes last. Ferrante mixes portland cement and sand, the ingredients for thick-bed mortar, and trowels it over the copper. For proper drainage, he tapers the bed from 2½ inches thick on the outside edges to 1¼ inches at the drain. He covers the thick-bed layer immediately with the mote adhesive medium bed thin-set, then starts laying tile. The floor dries by the next day, when the stall's final stone

Ferrante places a blue accent tile on the upper wall. For accuracy, he measures the cutout for the insert by setting four beige tiles on the floor with a blue tile on top, then carefully outlining the cuts, which he makes one tile at a time. Spacers hold tiles in position until they set, and are removed before grout is applied.

HOT AND STEAMY

Ah—muscle-soothing, sinus-clearing, invigorating steam. Complete units for a home shower, including a generator (hidden in a closet as far as 25 feet away) and controls, cost from $900 to $3,700. Generators range in power from 4 to 30 kilowatts and can fill a shower with steam in less than 15 minutes. "To determine size, we take the cubic footage of the shower and factor in what it is made of—ceramic tile, glass block, natural stone—and the distance the steam has to travel," says John Duggan, a sales manager for Steamist, the manufacturer whose steam equipment was installed during the renovation in Brookline, Massachusetts. The shower's generator runs on a 240-volt electrical hookup. A ¾-inch pipe carries cold water in, and steam pours out through a ½-inch outlet. If anything goes wrong, the repairman can easily reach the machinery, which occupies a closet behind the shower stall and is accessible from a hall

pieces—seat, shelf and threshold—must go in. He uses medium-bed thin-set mortar to set the double-layer 1½-inch-thick seat and the ¾ inch shelf in place. (He has left gaps in the wall tiles where necessary to support these additions.) Afterward, he uses medium-bed to affix the 2.5-pound curb cap to the threshold.

The next morning, he cleans the shower with a damp sponge and uses a rubber trowel to apply a layer of sandstone-colored grout to the tiles. The trowel acts as a squeegee and, when he pulls it across the walls, it leaves material only in the gaps between tiles. The grout needs about 10 minutes to cure. Once it becomes firm, he cleans the whole stall with a damp sponge.

Almost nothing remains to be done. The glass man has to measure for a frameless glass door, and the carpenter has to install the naturally water resistant Spanish cedar trim that will aesthetically tie the outside of the shower wall to the bathroom's poplar wainscot. Ferrante and his brothers haul the gear down to the truck, then come back for a quick inspection. The raw space has given way to the seductively smooth limestone walls of a steam shower—just waiting for some aching muscles. ■

FOR SOURCES, SEE DIRECTORY, PAGE 100

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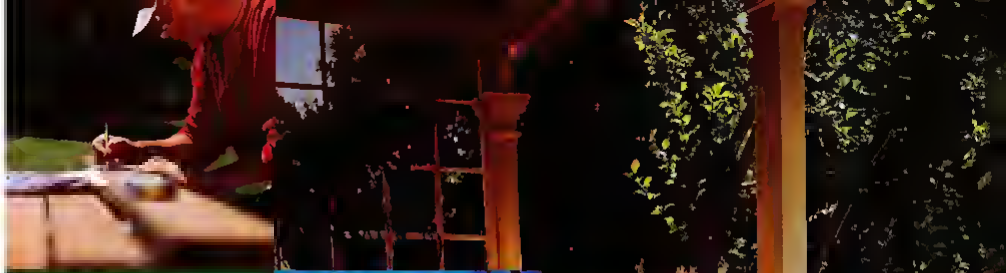

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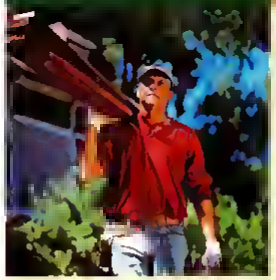

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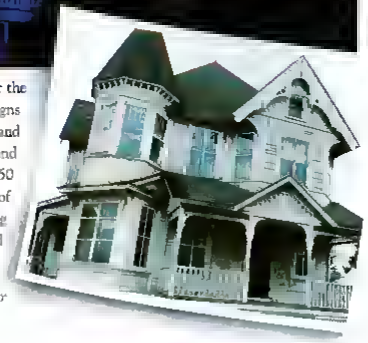

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LETTER from *This Old House*

DOWN HOME IN NEW YORK

The first time I visited *This Old House* magazine's new offices at Sixth Avenue and 47th Street I stepped out of the elevator into familiar territory, a renovation project. The paneling in the foyer had been ripped off the walls. Lightbulbs in plastic cages dangled from the ceiling, the floor was a gnarled concrete slab. For someone who has been fascinated with construction and renovation since childhood, this was great. In the lobby, chaos reigned. The walls were unpainted, the wood flooring was only half laid and boxes of fixtures were stacked about the room. Vinny Prestia, a drywall finisher, yelled, "Hey, it's Steve!" and stuck a bag of glazed doughnuts under my nose. Two electricians pulling color-coded wire from a spool looked up. "Where's *Nahm* when we need him?" The tour continued past partially completed offices inhabited by *TOH* magazine's at their computers or huddled in the corner on the phone while drywall finishers, painters and electricians worked around them. "This is terrific," I said to my guide, account representative Nicole St. Germain. "Yes, great," she said. "I just hope it will end soon."

Having survived two temporary offices, *This Old House* magazine had decided to renovate its own house. Construction commenced last June. Several months later the staff moved into their unfinished home. Renovating office space in Manhattan has its own set of schedule-defying challenges. Every piece of material, from a two-by-four to a toilet, must be brought into the city via truck, snaked through narrow streets and hoisted up a freight elevator to the job site. As one would expect, this can be expensive. New York City midtown high-rise renovations can cost more than $150 a square foot. We spent a lot less than that. How? By taking our own advice: Keep it simple. No fancy paneling or fabric on the walls. Ours are gypsum wallboard painted white. For the floors, old growth Southern pine salvaged from the river bottoms of Alabama and Georgia. The open plan requires fewer walls to construct.

Now the offices are finally complete. The stacked-up boxes have disappeared, replaced by artwork. The heart pine floors glow under their urethane finish. French doors admit glorious light. So welcome home, *This Old House* magazine. May these new digs serve well. I wonder, though, if we shouldn't have left the foyer in its post-demolition state as a reminder of what we're all about: the transformation of space. —Steve Thomas

PHOTOGRAPHS BY DIANA HAAS

It's a game of good-natured one-upmanship that has repeated itself since the first Saturn rolled off the line some seven years ago. One that is won by microns and microscopic stress fractures. And one that is played by folks like design engineer Byron Johnson and test engineer Will Bothe.

Byron's job is to make our cars last. Will's job is to tear them apart. (It's as close to a rivalry as you're likely to find around here.)

Which is to say, they don't go at it like Democrats and Republicans. But they still manage, in the most Saturn of ways, to get in their digs. Say a part Byron designed doesn't pass Will's tests. Then let the taunting voice mails begin. And if it does? Then the reverse holds true. Now, this sort of competition isn't limited to Byron and Will; it's repeated by each of the 500 engineers who work here. Each giving a mock insult here, a good-natured jab there. Ultimately ending in some really great cars waiting at your friendly Saturn retailer.

A DIFFERENT KIND of COMPANY A DIFFERENT KIND of CAR

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SATURN.

covered bridge to the past

Building history by hand

On his knees in the quack grass, Arnold Milton Graton wraps a 2-inch-thick rope four times around a battered wooden capstan and cinches it tight. He throws himself into the work. Striations of sinew stand proud between his shoulder blades. In the broiling midsummer heat and skim-milk humidity, he wears only aviator sunglasses, denim cutoffs and steel-toed work boots over gray wool socks. Sweat cascades down his bare back.

The rope stretches 30 yards to a block and tackle hitched to a boxcar-shaped framework resembling a pair of gigantic garden trellises. In 1880, any American 7-year-old could have identified the outlandish assemblage of criss-crossing timbers. Today, the structure would be a head-scratcher for most construction professionals.

It's the skeleton of a covered bridge.

Graton spent four months building the 45-ton 120-foot-long oddity. Now he is orchestrating the effort to pull it 195 feet over a little creek called the Auchumpkee, near Thomaston, Georgia.

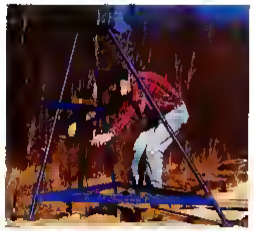
"'Bout ready," he says.

So is the crowd. Around Graton are young men in combat fatigues, dapper older gentlemen in khakis and snakeskin boots, ladies in web chairs sipping Dr Pepper and focusing cameras, all waiting expectantly in the cottonwood shade.

Such occasions were almost commonplace in the 19th

BY BRAD LEMLEY PHOTOGRAPHS BY MIKE HAMEL

The original, 106-year-old Auchumpkee Creek Bridge, inset, uprooted and smashed by a [illegible] timbers to compose about 15 percent of the new bridge's structure. Master bridgewright Arnold Graton, left, and assistant Everett Achilles mull over computer-generated plans for the old bridge's replacement.



A custom made three-legged drill press allows Graton to bore straight 2-inch-diameter holes through the overlapping lattice-truss timbers. Into these holes, crew member John Panagutti, below, pounds pegs, or trunnels, made of tough white oak. Although the trunnels were turned on a job-site lathe, Graton had their heads chiseled to resemble the drawknifed originals.

century, when hundreds of bridgewrights roamed the country building thousands of the snug little structures. Now that job falls to Graton, the master practitioner of this uniquely American and almost forgotten craft.

In 1805, Timothy Palmer spanned Philadelphia's Schuylkill River with America's first wooden covered bridge. Called the Permanent Bridge, it had a pitched roof and siding to protect the supporting truss members from rain, snow and rot. (Palmer was not, however, the first to cover a bridge; historians trace the idea back to Babylon, circa 780 B.C.) A covered bridge, Graton says, "is just like your house. Keep the roof and walls tight, it will last forever. An uncovered wooden bridge can fail in seven years."

Palmer's durable bridge inspired a veritable building frenzy throughout the country. By the end of the 19th century, an estimated 16,000 of them had been pegged and bolted together. "They used to be everywhere," says David Wright, president of the National Society for the Preservation of Covered Bridges. "Anywhere you would find a river or a gully, chances are it was spanned by a covered bridge."

Today, only about 815 covered bridges remain. The root cause: Henry Bessemer's smelting process made steel cheap enough to compete with wood. After the peak building years in the 1880s, the call for wooden bridgewrights went slack, and their sturdy creations vanished, slain by winds, arson, neglect and flood.

The Auchumpkee hardly looks like a bridge killer. Barely 20 feet across on moving day, it is brown and sluggish, rippled only by the odd water moccasin. But four years ago, after a tropical storm dropped 15 inches of rain in 24 hours, the phlegmatic stream swelled to a torrent. It yanked an 1892 covered bridge off its stone abutments and slammed it against a concrete-and-steel overpass 30 yards downstream, reducing the old bridge to kindling.

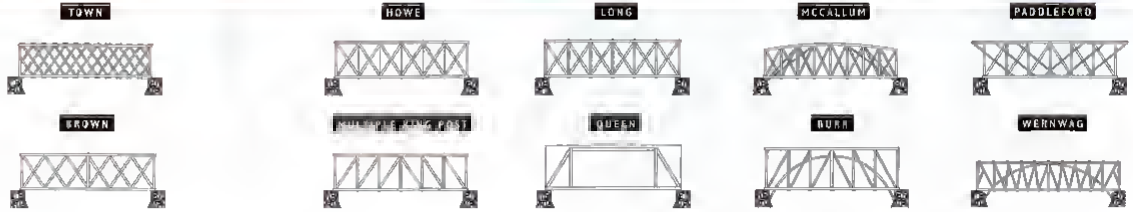
Armed with federal and state disaster-relief money, the Upson County Historic Preservation Commission asked Graton to rebuild the bridge. Recalls David Fischetti, the structural engineer who drew the project's plans, "The officials originally wanted

Patience, strong backs and three peeled logs known as gin poles allow Graton and two helpers to stand up a 20-ton Town Lattice truss in three hours. Each gin pole is equipped with a block and tackle and a hand-cranked winch to lend the requisite leverage.

BEAM REACH

Weathered-plank siding and shingle roofs are picturesque, but the real beauty of the covered bridge is its trusses. A simple bridge made of horizontal wooden beams can extend barely 15 feet without sagging. Stiffen those beams with a backbone of timbers pegged and bolted into various configurations of triangles, and they can leap formidable distances. The world's largest remaining single-span covered bridge—the Blenheim Bridge, south of Albany, New York—extends 232 feet, thanks to, appropriately, a Long truss.

Nineteenth-century engineers patented dozens of truss designs. They sold building rights by the foot and hired agents to make sure the bridgewrights paid up. The Auchumpkee Creek Bridge uses the Town Lattice truss, patented by Connecticut architect Ithiel Town in 1820. Because Town's truss could easily adapt to any length, the popular phrase was: "You could build it by the mile, cut it off by the yard." Later trusses, such as the Howe, incorporated steel parts, particularly tension rods, which dramatically boosted a bridge's bearing capacity.



ILLUSTRATIONS BY MARK ROSENSHEIN

A menagerie of local draft animals—including an ox, upper left, mules and a pair of prize Percherons—supply the horsepower to turn the bridge-pulling capstan. A block and tackle, below left, provides the mechanical advantage to move the 45-ton bridge. The covered bridge framework, right, crosses the creek on neat stacks of 4-foot timbers known as cribbing. Those stacks, in turn, rest on ski-shaped timbers known as shoes, which ride along on rollers made of peeled logs. A pair of steel I-beams temporarily hold everything aloft. "It gets complicated," says Graton's son J.R. "And every job is different. You need to solve problems right then and there."

three bidders. I told them, 'There aren't three people who build these things. Arnold's your guy.'"

Starting in December 1996, Graton and his son J.R. built an exact copy of the old bridge's framework on the Auchumpkee's east bank. Like 19th-century bridgewrights, Graton prefers to build on terra firma, then pull the structure over the gap. It beats the dicey business of building in place, which requires wrestling with huge beams on narrow scaffolds. Atop a level work surface of stacked 4-foot beams called cribbing, they painstakingly laid out each truss—the bridge's twin backbones—using 160 crisscrossing yellow pine timbers, each 18 feet long and weighing 120 pounds. Through these horizontal 3 by 10s, they bored 1,180 holes (two in every place the timbers overlapped), then filled them with an equal number of 22-inch-long white-oak pegs, sledgehammered home.

On May 20, using a trio of huge wall jacks, Graton and two crew members raised both sides and braced them upright. By July 4, the bridge was ready to move.

At 9:44 a.m., Graton sticks his right forefinger into the air and spins it. He shouts, "Let's go!" Grady, a 15-year-old spotted mule harnessed to the sandbag-braced capstan, begins trudging in a circle. Graton's bearded, barrel-chested son, sitting next to the capstan, keeps tension on the rope. As the rope slowly tightens, the bridge starts to creep forward almost imperceptibly. For the next three days, at a rate no faster than 6 inches a minute, Graton, his four-man crew and an assortment of local livestock will haul this massive, sweetly cambered pine lattice across the creek.

Anyone who's seen schoolbook pictures of Egyptians building pyramids would recognize the way Graton moves a bridge. He rolls it along on 24 peeled logs 5 feet long and 4 inches in diameter, across a temporary causeway just a few feet above the creek. The members of Graton's crew rotate the 40-pound log rollers from back to front as the bridge creaks ahead. Graton patrols all four stations, whacking rollers with a sledgehammer to steer the great bridge before it begins to veer.

He calculates that the combination of the capstan and the nine-strand block and tackle creates a 130-to-one advantage. That means Grady needs to pull with only 1/130 the force that would be required to tow the bridge unaided. The riddle of the pyramids solved? Not

exactly, but it's revealing that, using ancient technologies, an elderly mule can easily transport a 45-ton burden.

Even in the viscous 97-degree heat, there is something pleasantly anachronistic about the huge structure's hour hand pace. While much of modern life is quick, cool and easy, this work is slow, hot and hard, suited to patient temperaments as rare these days as the bridges themselves. Most remarkable, in contrast to the whine and *kachunk* of typical construction sites, this process unfolds in majestic silence, punctuated only by the basso-profundo groan of big timbers finding equilibrium.

Graton, meanwhile, never stops working. Sometimes he takes a turn pulling rope on the capstan, other times he adjusts the cribbing or knocks a roller. On this particular afternoon, his lunch consists of a plum tomato and a swig of water. "When we get busy," he says, "I'd just as soon let someone else eat." It shows. At 5 foot-9, he is a lean 140 pounds. Fischetti says, "I've seen him work for 14 hours on turnips."

Hefting 60 pound beams to extend the causeway, Graton pauses a moment to contemplate the suffocating Georgia heat. "This is warmer than what we need, probably." That's a long rant for this Granite State Yankee. When he speaks, he squeezes words out as if he were simultaneously lifting weights. Asked to comment on the satisfaction he gets from preserving these dwindling examples of Americana, he says, "Kind of nice to save something that's going out fast." Given another minute to expand on this premise, he lets the silence expand instead. Once, when Graton was billed as the featured speaker at a program about covered bridges, he refused to utter a sound. "I had to give the speech for him," says Fischetti. "In response to a direct question, he'd say, 'Ayuh' and leave it there."

For nearly his entire life, Graton, 60, has built and shepherded and patched bridges. He started in 1947, a lad of 10, helping his bridgewright father, Milton. The elder Graton had preserved the old professions skills and techniques, and in time passed them to his son. "Milton was a craftsman without peer," says Wright. "Arnold fits the same mold." To date, he has ministered to "40-odd" bridges over creeks, gullies and rivers from Vermont to California. Quite an accomplishment for one man, but it's hardly enough. On average, 16 covered bridges each year fall victim to the predations of nature or the vandalism of man.

No ceremony marks the moment when the bridge rolls into final position. Graton simply says "Time for an adult beverage," and strolls up the rise to his construction trailer. The locals dropped off some cherry-flavored moonshine as a gift earlier in the week, but Graton opts for a beer.

His work here is far from finished. Graton and J.R. still have to add entry ramps, hang the board-and-batten siding and shingle the roof. They will also stack stone and mortar to bring the abutments 2 feet above their original height, elevating the bridge, they hope, above future floods.

Then he'll head to the next job. Graton is away from his home in Ashland, New Hampshire, as much as nine months a year, traversing the nation from bridge to bridge, living in motels and trailer parks. To contemplate his life, and to see how much brain and muscle he devotes to his work, one begins to appreciate these bridges with new eyes. And it makes their creep toward extinction all the more poignant.

Building and repairing bridges hasn't made Graton rich. "Sometimes the pay is good, and sometimes it's darn poor," he says. The Auchumpkee Creek project fits the latter category. The $208,000 budget is "not nearly enough." As a topper, thieves burglarized the site three times, lifting $35,000 worth of tools. He calculates that he won't make a dime on this job.

Why, then, is he here?

The cicadas buzz. The snakes slither. The exquisite framework arching over the river glows in the nacreous twilight. Romance and engineering, charm and craftsmanship, elegance and efficiency intersect and embrace, bound together as tightly as pegged lattice. The shy man pulls at his beer.

At last he says, "I just figure that if someone wants a covered bridge, they ought to have it." ■

Topped with a wood-shingle roof and embraced on either side by plank ramps, a new Auchumpkee Creek Bridge awaits only its siding and an official ribbon-cutting ceremony before it can be called complete. Although more than strong enough to support cars, the bridge will be open only to foot traffic.

FOR PROVIDES SEE DIRECTORY - PAGE 1.07

This Old House, 27 stories high

The magazine builds a working home

BY JACK McCLINTOCK PHOTOGRAPHS BY GUY FLOPPENBURG

Think of a gigantic concrete box suspended more than 300 feet in the air above New York City. The box—134 feet long, 170 feet wide and 12 feet high with windows all around—is empty except for two bathrooms and four elevators in the middle. No dividing walls, no fixtures, no furniture, no personality—a space so raw it stultifies the imagination. Now try to think of the box as home.

After two years in temporary quarters, *This Old House* magazine has moved into its own place, and a concrete box is what's available for office space in a typical New York City skyscraper. "The dream location would have been a New England saltbox two and a half minutes from Norm Abram's New Yankee Workshop," says Eric Thorkilsen, the magazine's president. But national publications need Manhatten, where the talent pool lives and advertisers buy display space. Thorkilsen and Stephen Petrenek, the editor in chief, checked out the suburbs, but few likely mansions had the necessary 20,000 square feet or could be converted to commercial use. In the end, they decided to lease space in the city, engage a great architect and build in the character.

"The challenge was to create a modern office that reflects the spirit and heritage of This Old House," *says architect Daniel Rowen.* TOP LEFT: *Before the build-out, the raw space has nothing but a few steel columns enclosed in gypsum.* ABOVE: *Rudford Richards frames out the rough openings for the conference room doors while José Bardales pre-paints a plywood platform for overhead lights.* BOTTOM LEFT: *A gallery leads to the finished conference room furnished with Windsor chairs and a 5-by-21-foot table made with reclaimed pine flooring.*

Architect Daniel Rowen was asked to take the gigantic boxlike space on the 27th floor of 1185

Avenue of the Americas and turn it into a working home for a staff expected to grow to 50, with all their computers, light tables, books, catalogs, sample tools and building materials, fresh pots of Starbucks and personal effects—including a toy basketball hoop, family pictures and design director Matthew Drace's chrome-plated barbells. The floor layout had to be modern and efficient, but nobody wanted a cutting office. After all, the magazine is about old houses, and its workplace should remind the staff, gently but persistently, how an old house feels. Rowen agreed, provided he didn't have to tack on crown moldings and lumberyard clapboard siding, creating a parody—a "cartoon," he says—of an old house. He also insisted that the materials used to evoke a house would be authentic and appropriate for a midtown Manhattan skyscraper.

Rowen began with a simple design concept: an airy, loftlike space under a ceiling of exposed concrete. But after the office's previous tenants vacated and workers ripped out the dropped ceiling and all the fixtures, Thorkilsen and Rowen entered the box, stared up at a hideous snarl of heating, water and drainage pipes and shook their heads in despair. The space they had chosen—sight unseen, because they'd inspected another, nearly identical floor instead of the actual one—turned out to be just below the building's mechanicals floor. This was a double-height room filled with water pumps and air-conditioning units whose steam pipes and conduit overflowed into *TOH*'s space and choked the cavities between the ceiling beams. "It's like buying a house," says Petranek. "Things are never perfect."

Determined to make the best of the situation, Rowen went back to the drawing board and focused on elements he could control. To

LEFT: In command central—a meeting area set up in This Old House *president Eric Thorkilsen's future office—Mike Nicolich, left, and Pat Cesare review a layout for heating and air-conditioning ducts. BOTTOM: "We wanted to envelop the staff in an environment that gave them subliminal* This Old House *signals all day long," says Thorkilsen, shown in his completed office.*

begin with, he pondered a philosophical dilemma: how to subdivide the space equitably, minimizing the distinctions of rank among employees. In a house, Mom and Dad get the master suite—just as Thorkilsen, Petranek, vice president and publisher Tom Ott and books publisher Andrew McColough would inevitably get corner offices. Figuring out the rest of the interior wasn't so easy. Petranek facetiously proposed that one way to create a democratic layout was to draw radial lines outward from the central elevator lobby to make a pie of 50 equally sized slices. But then each office would measure about 6 feet wide with a sliver of daylight at the end.

Like it or not, Rowen was stuck with some version of a time-tested pattern: Concentric bands of offices would surround the hull's-eye of the elevator core: an inner band of windowless offices, then a band of corridor and an outer band of offices with windows. For all but the staffers with outside offices, a bit gloomy. But, Rowen thought, what if he could make the rooms more equal—and bring daylight through the outer offices, into the corridor and beyond?

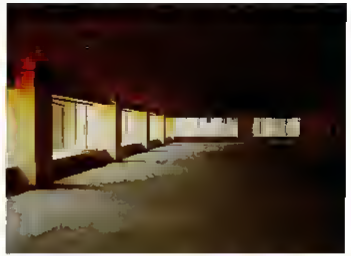
Whatever he designed had to fit under the ceiling, which had to fit under the pipes, so he started there. He didn't want a sea of acoustical tiles. Instead he designed a high, smooth, sculpted ceiling of white-painted plasterboard with expanses of warm, neatly recessed lighting.

Rowen sketched an elevator lobby beneath the ceiling, then drew in a reception area, corridors, offices, workstations, conference rooms, a kitchen, a gallery, storage and even—romantically perhaps, but at Petranek's insistence—a woodworking shop. Construction crews trooped into an empty concrete space, stared out the windows at the panoramic city view and put up their ladders and scaffolds. Carpenters spray-painted wall positions on the concrete floor and, when the positions had been double-checked, put down metal tracks and erected steel studs. The crew used stud guns to shoot metal hangers into the overhead slab, then dropped ¼-inch threaded rods to the final ceiling height and attached tracks and clips to hold the plasterboard. As the carpenters moved on, electricians and plumbers roughed in wiring and pipe. Dust filled the air. Debris piled up, got shoveled into cans and was carted out. Workers put up plasterboard, taped it and plastered it, leaving wires sticking out of rough openings everywhere. A shape began to emerge. The box was becoming a maze.

The outer perimeter was ringed with 38 windowed offices. Some had three windows, some had two, but they were all as nearly identical in size as the building's steel columns permitted, and the corner offices—although they had two windowed walls and twice the view—weren't much larger than the others. Petranek's corner, for instance, was about 250 square feet, a quarter of the size of an editor in chief's office at some magazines. Rowen's next step was more radical, and it produced an even bigger bang. All the offices sported big holes in their corridor walls—holes twice as wide as doors. When doors arrived, everyone saw why. They were French doors, and each office got a pair of them.

Suddenly the whole atmosphere changed. The French doors made the space tranquil, cozy, even a bit domestic—a place to sit down, read a book, pet a dog, cook a hearty soup, pick up a handsaw and launch a household project. Even with the French doors shut, sunlight poured through their glass panes and flooded the corridor, where gray carpet softened the glare. The carpet was industrial, but the effect was residential. And the French doors demolished elitism. Anyone could walk down the hall, glance into—and through—any office and see the sun, the Chrysler Building, the East River, a passing cloud. Thorkilsen was delighted. "We had limited money, so we had to choose a couple of spots to make our move and send our message," he says. "The doors do that."

A traditional New York office has a band of small,



BELOW LEFT: At the outset, 39 foot-wide and 170 foot-long corridors flank the elevator core. BELOW RIGHT: By the 10th week, plasterboard partitions go up. BOTTOM: Finished workstations borrow natural light from the outer offices. Robert O'Connell, a T O H. *designer, stops to chat with a coworker. O'Connell loves the wide hallways. "I just wish I could wear my Rollerblades on the job."*

windowless offices just inboard of the corridor, but instead Rowen designed 40 workstations halfway open to the corridor to admit more light. Partial walls let the eye travel a long way, adding to the sensation of openness. "I like a calm space," Rowen says. "People will bring their own things to the office, and that will become the ornament. I like to frame it in a handsome, organized manner."

When it was time for furniture, Rowen turned to Jonas Milder, a German-born designer of custom cabinets. Milder made built-in desks, shelves and storage units of fine Finnish birch plywood. A 6½-foot desktop module could serve as a wall-hugging countertop or turn 90 degrees to become an L-shaped desk. With its unfinished plywood edges and satin-chrome legs to remind the eye of expensive tools, the furniture seemed part of an oddly elegant workroom, half study and half shop.

And that was apt, because the 27th floor was about to become a combination construction site and office. The *T.O.H.* staff had already moved twice to temporary quarters. The lease had expired again and, ready or not, everyone had to move. Editors and art directors unpacked boxes as tradesmen drilled, sawed and pounded. "The core was largely unfinished, with no carpet, no paint and no furniture," Thorkilsen says. Every trip to the bath-

LEFT: Glen Lauer, left, and Lauchland Joseph balance on a makeshift beam as they hang plasterboard on a window-surround soffit. BOTTOM: The 9-by-17-foot office is now the home of copy editor Rebecca Reisner. "The simplicity of the design allows you to make your own statement when you decorate the room," she says.

Tough Stuff

Set a hot coffeepot on the desk. Hold a 16-ounce hammer above the desk, and let go. Then dump a puddle of epoxy next to the hammer, and walk away. Come back in a couple of hours. The coffee's cold, the epoxy hard as iron. Lift the pot, move the tool and pop off the chunk of epoxy with a putty knife—surprisingly, the desk is still like new. Designed by Jonas Milder of Brooklyn, New York, the desktop is made of a special construction-grade European plywood that has 19 laminations per inch, heat- and pressure-sealed beneath an impermeable phenolic-resin film. The plywood is so durable that Europeans use it to make the sides and roofs for boxcars and to build concrete forms that are reused a half dozen times.

Milder refined his design for the system after a trip to Finland, where he saw family farms that were growing birch trees on a sustainable basis and plywood factories that could produce sheets of laminate in any thickness. He realized he could design furniture in New York, order plywood from Finland and have it container-shipped over, cut to shape with computer-operated saws and assembled. The concept reduces waste and warehousing costs.

Daniel Rowen, the architect who designed *This Old House*'s new office, hired Milder for the job, having worked with him on other projects and been impressed by the clean look and durability of his modular design systems. *T.O.H.*'s new furniture arrived in Brooklyn as just a few crates containing 1,000 4-by-8 panels of blond 5/16-inch plywood that he had cut to size and assembled. His design cost about half the price of furnishing each office individually. And nobody worries about spilling coffee or epoxy—or dropping hammers—on the desks.

room or coffeepot gave staffers a glimpse of the bone, blood and muscle that power a building and hold it up. "It's like an X ray," says Adam Campagna, the project architect. "You learn more when it's still a skeleton." Staff members also got a taste of what a *T.O.H.* home owner goes through. At the same time, workers were enjoying themselves, glad that *T.O.H.* appreciated them. With a cheerfulness not always observed on Big Apple construction jobs, they worked long days to meet the deadline. "Everybody wanted to meet Norm, but he never showed up," says Michael Goldberg, the project superintendent. What most fascinated the workers, he adds, was the combination of residential and commercial elements.

The commercial part comes as no surprise, of course. It begins downstairs in a very palpable New York City, a vast generic lobby where office workers swarm into elevators. The doors slide shut and, when they slide open again, a visitor finds himself standing on *T.O.H.*'s Pennsylvania bluestone porch. The walls have a traditional feel, suggesting white-painted clapboard. On the other side of a pair of French doors, comfortable-looking furniture rests on a bright pine floor that gleams golden under cheery halogen lights. It could be a quiet living room in Maine. The floor is heart pine from logs more than a century old, salvaged by divers from Georgia and Alabama rivers, then dried and milled into strips.

Rowen's bluestone elevator lobby and white-painted walls don't try to ape the real thing. Yes, the walls suggest clapboard, but they are actually medium density fiberboard cut to order with a custom-shaped bead and installed horizontally. And the bluestone isn't cut

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in random shapes as for a true patio. "That would be the cartoon," says Rowen, who chose 11½-by-17½-inch rectangles to create a refined, commercial application of a residential idea.

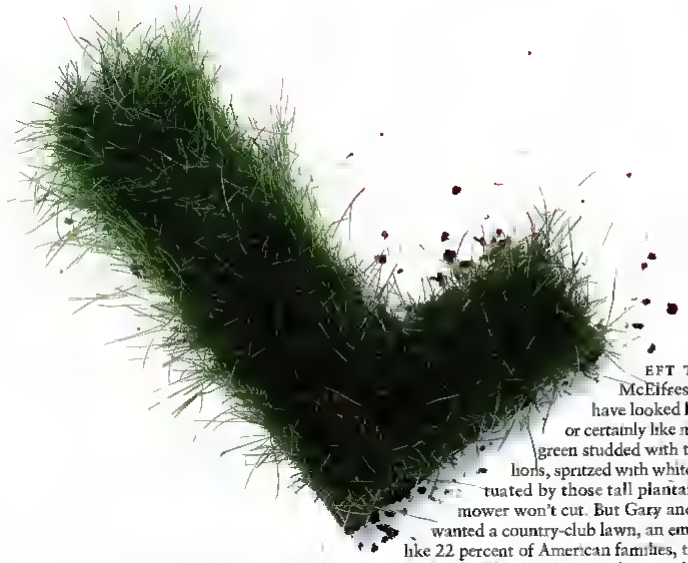
As the 27th floor neared completion, the raw, echoing concrete box disappeared behind comfortable surfaces. Every day, fewer folks wearing clanking tool belts passed back and forth on the other side of the French doors. Calm settled in. *T.O.H.* staffers sat, perched, sprawled in their offices and at their workstations, looked around, visited one another, admired the light, the views through the doors and windows, the handsome cleverness of Milder's furniture. They uttered words like "tranquil" and "magical" and "family feeling." Writers, editors and art directors ensconced themselves happily behind French doors and began putting out the next issue of the magazine. ■

RIGHT: Perched behind bats of insulation, Wai Tang-Atcom installs phone and data wiring before carpenters close up the walls. BOTTOM: The reception area feels homey, but the room behind the logo houses T.O.H.'s computer server, which also links staffers to cyberspace.

the best lawn

Here's how to grow gorgeous grass—and feel good about it too

BY CLAUDIA GLENN DOWLING REPORTED BY TOM YULSMAN



STILL LIFE: MICHAEL GRIMM PHOTOGRAPH BY CHRISTIANA CEPPAS

LEFT TO ITSELF, THE McElfreshes' lawn would have looked like yours, maybe, or certainly like mine—a variegated green studded with the gold of dandelions, spritzed with white clover and punctuated by those tall plantain things that the mower won't cut. But Gary and Lynn McElfresh wanted a country-club lawn, an emerald carpet, and, like 22 percent of American families, they decided to let experts produce it. Like most such outfits, the lawn-care service fertilized and sprayed on a schedule. Like most home owners, the McElfreshes didn't ask what chemicals the pros were using, figuring they knew what was safe.

As recommended, the McElfreshes kept their cocker spaniel off the lawn for 12 hours after each spraying. But then Dasher began throwing up. "He just got weaker and weaker," Lynn recalls. The family vet said the dog's liver had failed and he would soon die. And then the vet mentioned an odd coincidence: She had seen six other dogs die for the same reason that year, and their owners had all used the same lawn-care service. There was no proof of cause and effect, but suspicion was enough for Gary. "They must have known that the stuff they were using wasn't good for animals, because they always left a warning card on our door," he says. "They killed our dog." And if the sprays could harm dogs, the couple wondered, what about their two children?

Many other Americans are similarly concerned. Already ground zero in a struggle with nature, the lawn has lately become the site of yet another turf war. One set of experts prescribes a course of chemicals guaranteed to produce a perfect carpet of grass; another set warns of health risks and environmental catastrophes associated with those chemicals. A home owner with a conscience feels bewildered, wondering how to grow a lawn that is both

For This Old House host Steve Thomas, the pleasures of a plush lawn include getting out with an old-fashioned sprayer on a sunny day. Sprinkling by hand for 10 minutes might add ⅛ inch of water—enough to dampen the soil an inch deep and help sprout newly added seeds. But no one has the patience to stand at the end of a hose long enough for the deep irrigation that established lawns need. Bentgrass roots tunnel down as much as 8 inches, bluegrass, red fescue, rye and saint augustine grass, 18 inches, and zoysia, Bermuda and tall fescue, 5 feet. Cool-season grasses—ryes, fescues and bluegrass—can survive dry weather with no irrigation, but they must be allowed to become dormant gradually. Abruptly discontinuing irrigation in mid-summer can kill the grass

ILLUSTRATION BY ANTHONY SIDWELL

Far more than a carpet of grass rooted in a thin layer of topsoil, a healthy lawn shelters a staggering abundance of organisms, most of them beneficial. In the soil beneath a square yard of lawn live billions of individual bacteria, millions of tiny worms and 50,000 insects and mites, as well as a rich community of fungi. With powerful microscopes, scientists can see how bacteria congregate around grass roots, feeding on sugars, carbohydrates and proteins that leak out because photosynthesis in the leaves produces more food than the plant needs. Tiny worms called nematodes move in to eat the bacteria, then excrete material rich in nitrogen that the roots absorb. (These nematodes differ from root-feeding nematodes, which are garden pests.) Fungi keep the thatch layer in check, converting dried leaves into food for nematodes and mites, which in turn become food for larger and larger creatures until at last there's an insect or a spider for a bird to eat. Traditional lawn chemicals throw this system out of sync. Although they control pests in the short term, repeated applications may backfire. When pests die, their predators starve. If a more pesticide-resistant strain of pests then stages a comeback—as has happened with more than 500 types of insects and mites, 100 weed varieties and 150 plant diseases—no enemies remain to keep the balance.

GRASSHOPPER
Nibbles leaves; can be controlled with spores of Nosema locustae, *available by mail order.*

ROBIN
Hunts down caterpillars, beetles and sow bugs.

CHINCH BUG
Feeds on grass leaves

BIG-EYED BUG
Eats chinch bug

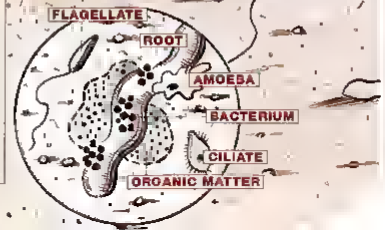
JAPANESE BEETLE
Adults feed on a wide variety of plants, females return to grass to lay eggs.

EARTHWORM
Aerates soil, breaks down thatch

GRUB
Larva of Japanese beetle eats grass roots; can be controlled with parasitic nematodes and, in warm areas, bacteria that cause milky-spore disease.

ANT
Aerates soil, some species eat eggs of sod webworms.

SOIL FOOD WEB
Bacteria feed on nutrients exuded by a grass root and on organic matter in the soil. They also absorb nitrogen in the soil, preventing it from leaching away. Protozoans (flagellates, amoebas, ciliates) eat the bacteria, excreting nitrogen in a form that the roots can absorb.



beautiful and environmentally friendly—green and green.

About 21 million acres of residential lawns are spread across the United States, and each year they are doused with 54 million pounds of pesticides, many of which leach into waterways. Last year, the U.S. Geological Survey reported that 95 percent of stream samples collected nationwide contain at least one commonly used lawn pesticide: insecticide, herbicide or fungicide. And many streams also carry nitrogen and phosphorus, the main ingredients in fertilizer. Where these streams meet the ocean, the pollutants cause toxic red and brown tides to worsen. Around the Chesapeake Bay and in other areas where such algae have killed millions of fish, environmental experts are urging consumers to use restraint. "A typical home owner applies more fertilizer and pesticide per acre than any farmer," says Marc Aveni, a cooperative extension agent in Prince William County, Virginia.

Evidence of environmental harm associated with lawn-care chemicals is slowly mounting, although some of it is conflicting. Five studies published in the 1980s found that exposure to 2,4-D, the most common herbicide on home lawns, and to related pesticides increased the risk of lymphoma by two to seven times. Four similar studies found no link, but other researchers found two of those were biased. In 1991, a year before Dasher died, Howard M. Hayes of the National Cancer Institute and other scientists found that dogs whose owners used 2,4-D had double the risk of lymphoma. In 1995, North Carolina researchers Jack K. Leiss and David A. Savitz reported a fourfold increase in soft-tissue cancers in children whose yards were treated with pesticides.

But it was the casualty in their own backyard that convinced the McElfreshes. They have gone organic. Technically, "organic" means any compound containing carbon, usually matter once alive. Chemical companies sometimes take advantage of the fact that consumers interpret the word to mean "safe and natural" to apply it to petroleum-based pesticides, which cannot legally be labeled "safe" although they do contain carbon. But for Clifford Maske, who now cares for the McElfreshes' lawn in Decatur, Illinois, "organic" applies to a philosophy of gardening he learned from his mother. It boils down to chicken soup for the soil.

A square yard of healthy lawn is a miniature biosphere where insects, mites, worms, fungi and billions of bacteria have distinct roles to play. Grass, like all plants, is designed to manufacture the nutrients it needs from sunshine, water and soil minerals, with the help of these tiny organisms. Predators and prey keep the whole system in balance. Proponents of organic lawn care believe they can build better turf by nurturing the soil organisms than they can by focusing on leaf growth alone. "I can pump you full of steroids and make you look healthy," says Phil Catron, the founder of NaturaLawn of America, an organic-care firm with franchises in 19 states. "But underneath, you'd be rotting away."

The basics of establishing a truly healthy lawn are the same for professionals and home owners: planting grass

varieties suitable for the area, testing the soil, adding organic material, mowing high, leaving clippings on the lawn to add nitrogen and organic matter to the soil, monitoring the lawn for pests and spot-treating problems in as noninvasive a manner as possible. The process is slow. "It takes three years to regain soil health," Maske says. But in the end, proponents claim, maintenance is easier.

The first step: Assess whether to maintain the existing grass or switch it to some of the rugged new varieties with built-in resistance to drought, disease and pests. These include perennial ryegrasses ("Repell," "All Star," "Cowboy") and turf-type tall fescues ("Apache") bred with fungi called endophytes, which live between the grass cells and make the blades distasteful to leaf-eaters. How these fungi benefit lawns came to light while researchers were investigating the fact that grazing animals suffer weight loss, lower pregnancy rates and tremors when they ingest infected grass.

Maske decided that the McElfreshes, who moved after Dasher died, to a house with a very rough lawn, needed to reseed with a mixture of endophytic grasses that stay green without much water. Weak, temperamental lawns can also be changed to the improved varieties by over-seeding. "It's usually worthwhile as long as turf grasses cover at least half the space," says Michael Talbot, an organic-lawn-care guru in Boston. If not, the lawn may need to be completely reestablished.

Professionals such as Maske and Talbot have ready access to the improved varieties. For home owners who can find only "grass mix" at their garden center, Talbot recommends looking for packages with diverse species and a notation on the label that at least some of the seed is "naturally insect-resistant"—code for endophytic. If no label says that or the only endophytic packages contain mostly ryegrass, a short-lived species, he recommends looking for a blend high in fine and tall fescues with names—"anything in quotation marks," he says. This usually indicates a recent variety. A cooperative extension office, agricultural college, specialized nursery or organic lawn service can recommend the best types for a specific terrain.

For a nominal fee, the same experts can also test the soil. The sample should be mixed from several spots of the lawn. (Problem areas might warrant separate samples.) Most grasses thrive in slightly acidic to neutral earth, which has a pH of 6 to 7. Without the proper pH, the microorganisms that break down organic matter and release nutrients to plants are not as active. Adding ground limestone makes acidic soil more neutral; sulfur makes alkaline soil more acidic. People who don't get a soil test may pour on too much lime or sulphur or they may use the wrong kind of lime. "If the testing place recommends lime high in calcium, don't use dolomitic lime, which is high in magnesium," Talbot says. Correcting the pH to suit grass also helps to discourage dandelions, which like slightly alkaline soil.

The soil test may also indicate that the grass needs nitrogen, phosphorus and potassium—those magic fertilizer ingredients represented by numbers like 10-5-5. Many consumers despair as they stand in the garden center, trying to make sense of those numbers, of the quantities, compositions and prices. Why are organic fertilizers so much more expensive? Why is their nitrogen content so much lower? How much should be used?

As for the numbers, 10-5-5 fertilizer is 10 percent nitrogen, 5 percent phosphorus and 5 percent potassium. To figure out the amount of nitrogen in a 25-pound bag, multiply the proportion (.1) by the weight of the bag; it contains 2.5 pounds of nitrogen. Typically, a 1,000-square foot lawn on decent soil benefits from about a pound of nitrogen once or twice a year to stimulate roots during growth periods. For lawns planted with cool-season varieties—ryes, fescues, bluegrasses—the most important feeding is in early fall. Fertilizing in spring produces lush leaves but, if done too late or too liberally, it's at the expense of root development. These grasses should not be fertilized in summer because they are dormant then, especially if not irrigated. For lawns planted with warm-season varieties—Bermudas, saint augustine, centipede—the opposite applies. These grow in summer and benefit from late spring fertilizing.

Man-made fertilizers often have a very high nitrogen content. Many consist of urea synthesized from ammonia and air; they can be more than 45 percent nitrogen. (Because synthetic urea also contains carbon dioxide, it can be called "organic.") The fertilizer produces lush blades, but the burst of growth depletes carbohydrate reserves needed for strong roots. Such synthetics are usually water-soluble, so much of the nitrogen leaches away with the first rain. This makes the fertilizer useless to the grass and a pollutant in nearby waterways. "I would not use a fertilizer with more than 40 percent soluble nitrogen," Talbot says. "The turf can't use it all, and then there's a period when the nitrogen diminishes." The compounds also burn grass if not carefully used. Some ureas are now polymer-coated for slower release.

But no chemical fertilizer can add organic material. A chemically fertilized lawn, especially if the clippings are removed, eventually becomes virtually hydroponic, existing

A RELAXED APPROACH

Many natural fertilizers are smelly, dusty and expensive. For people who won't use them, Tom Cook, an associate professor of horticulture at Oregon State University, suggests using the new slow-release synthetic fertilizers sparingly. His tests found that polymer-coated urea synthetics release nutrients just as slowly as organic fertilizers do. "You'd be hard-pressed to tell one treatment from another."

What does Cook do for his own lawn? Not much. When he moved to a house with a 40-year-old lawn in bad shape, he spread herbicides to kill dandelions and used synthetic fertilizers to help the grass come back. In the 12 years since, he has done nothing but mow and leave the clippings on the lawn. "I'd rate it as good as any other lawn in my neighborhood and in the top 20 percent in the city," he says.

ILLUSTRATION BY MARK ULRIKSEN

THE HAZARDS OF LAWN PESTICIDES

No one really knows what pesticide levels are safe. Insecticides, herbicides and fungicides are by definition poisons. "They are just about the only chemicals consumers use that are specifically designed to kill something," says Aaron Blair, the chief of the occupational epidemiology branch of the National Cancer Institute. Given the paucity of hard data about how low exposure to pesticides relates to diseases, it's better to be safe than sorry, he says.

The most widely used insecticides are organophosphates. Despite the prefix, they are not organic in the sense of "healthy." Most common are chlorpyrifos (trade names Dursban and Lorsban) and diazinon (Knox Out, Spectracide, Basudin). These are neurotoxins. They block an enzyme crucial to the nervous systems of insects but may also interfere with human nervous systems and harm birds and fish. Because it's a threat to wildlife, diazinon has been illegal for use on golf courses since 1988. Home owners still apply some 8 million pounds to their yards each year.

The most commonly used herbicide for home lawns is 2,4-D, a chlorinated phenoxy compound and a major component of the defoliant Agent Orange used in the Vietnam War. The compound is often used in combination with MCPA and dicamba, also systemic herbicides. All can produce some symptoms of poisoning in humans and are slightly toxic to wildlife. Some studies have indicated the existence of a link between 2,4-D and non-Hodgkins lymphoma. Dicamba is suspected of causing birth defects in humans.

ing on only water and fertilizer. The lawn will need more and more additives to accomplish what the organisms do in healthy soil. Maske claims he can tell the difference by feel: "Five years down the road, the soil under a lawn treated organically feels as soft as butter, while the other is real hard. When you delete organic material, it's the minerals that are left behind."

Most organic fertilizers do not dissolve in water. They are broken down slowly by the microorganisms. The kick these fertilizers provide is therefore not immediate, but it lasts longer. The products also add many nutrients that the soil organisms use in ways scientists don't fully understand. Paul D. Sachs, author of the *Handbook of Successful Ecological Lawn Care* and owner of a Vermont company that supplies fertilizer to Maske and Talbot, says this process accounts for why organic fertilizers excel even though the nutrient levels listed on the bag are low. "Those numbers refer to plant nutrients, not soil nutrients," he says. "Once you've provided nutrients needed by the biology of the soil, you've created an environment that is extremely hospitable to plants."

Organic fertilizers may be made from animal manures (poultry droppings are particularly high in nitrogen), sewage sludge (the best is dried activated sludge, made in a process using microorganisms), fish meal, blood meal, cottonseed meal or soybean meal. Good organic sources of phosphorus are bone meal and ground rocks containing calcium phosphate. Potassium, or potash, may come from wood ashes, greensand (a naturally occurring hydrated salt of iron and potassium silicate) or seaweed. Sachs, who markets mainly to commercial operations, includes a variety of ingredients in his fertilizers: kelp meal from Nova Scotia, rock phosphate mined in Florida, potash from the desert near the Great Salt Lake and natural nitrate of soda from Chile. He buys a compost of coffee grounds and cocoa waste, a wood fiber byproduct from the paper industry and dried whey from cheese factories. "That's what Mother Nature likes: diversity," Sachs says.

Because of their organic content, most natural fertilizers are bulkier than synthetics. They also cost more. But some organic fertilizer is free: Clippings left where they fall supply significant amounts of nitrogen and potassium, reducing the need for fertilizer by half. If owners aren't fussy, this may suffice.

Composted yard waste can also help build the airy, loose soil that grass needs. A top dressing of ¼ inch of fine compost breaks down thatch (the spongy layer of dead but not decomposed root runners that forms on over fertilized, over watered lawns). Recent studies show that some composts actually control diseases such as dollar spot, brown patch and red thread. If the thatch is thick or the soil dense and compacted, a core aerator may be needed to remove plugs of soil.

Some gardeners clip grass short, hoping to avoid formation of thatch. This may hold true for Bermuda grass and other prostrate varieties, mostly warm-season types, but erect species such as bluegrass, ryes, fescues and saint augustine grass do much better if clipped high. "I generally mow a new lawn in spring at 2 inches three or four times," says Talbot, whose lawns mix ryes, fescues and bluegrass. Then he lets the grass grow to 3 inches. Taller grass has deeper roots, less susceptible to drought and pests. In addition, it keeps weed seeds shaded so they don't sprout. P. H. Dernoeden, an agronomy professor at the University of Maryland, showed that mowing at 3½ inches combats crabgrass more effectively than the most common preemergent herbicides do.

The organic method emphasizes prevention. But, says Maske, "Even if you eat right, once in a while you have to take some medicine." The main organic weed-control product is corn gluten meal, the part of corn left after syrup is extracted. Spread early in the spring—just as traditional preemergent herbicides are—corn gluten meal can keep weed seeds from sprouting. As the meal decomposes, it doubles as a fertilizer. Organic pest controls, available by mail order, include lady bugs, praying mantises and cultures of specific bacteria and fungi. Talbot monitors lawns for grubs, sometimes rolling back sections of turf to see what is dining on the roots. If he finds more than 10 grubs in a square foot, he introduces microscopic worms called nematodes, which arrive imbedded in a sponge. He soaks it in a bucket of water to release the nematodes, then sprays with the water. Where crows digging for grubs are the main problem, he spreads bird netting for a couple of weeks.

If all else fails, Talbot replaces problematic sections of lawn with ground cover or a pathway—and occasionally uses a spot application of an insecticide or herbicide. "Even for people who go apoplectic over one dandelion, they can eliminate 90 percent of their pesticide use by spraying just when and where it's needed," says Talbot, pointing out that a weed is simply a plant where it's not wanted. "The irony is that farmers in California who grow dandelions as greens have one pest that's absolutely the worst—turf grass."

Howard Kaufman, who offers traditional and organic care in Westchester County, New York, says the toughest part is fighting weeds without herbicides. To crowd them out, he broadcasts four times more seed on organic lawns than he does on the others.

The McElfreshes acknowledge that they did have a few dandelions in the first years of their organic lawn, planted in 1992. But lush growth eventually choked out the weeds. Gary now scoffs at the "steroid shots" his old lawn needed. "Your lawn is not going to be green as quickly as one with chemicals, but over time it's even better," he says. "We'll compare our lawn to any other in the neighborhood." Some of the neighbors have decided that the grass really is greener on the McElfreshes' side. Many of Maske's 600 customers have also converted to ecologically sound lawn care, he says. "They see their neighbors—my customers—with nice, green lawns when their own are heat stressed." The McElfreshes were so impressed with Maske's results at their house that they hired him to maintain the meticulous landscaping at two McDonald's restaurants they own. And they have a new cocker spaniel, Ginger, who's doing just fine, thanks. ■

PICKING A LAWN SERVICE

Some lawn services advertise organic care just to draw in customers. Others really deliver. Close questioning reveals the truth. "Determine the specifics," suggests Jay Feldman, executive director of the National Coalition Against the Misuse of Pesticides, based in Washington, D.C. "Do they monitor for pests? Do they monitor for beneficials? They should. Or are they simply on a schedule of applications? That's not good enough."

Companies that offer both traditional and organic regimens often reveal in their sales pitches where their hearts lie—and what they will do if problems arise. "The company might use chemicals mistakenly or even try to encourage the client to use what it might characterize as softer' chemicals," Feldman says. "It could be bait and switch." Some companies call their products "organic based," which they define as being at least half natural.

Make sure the contract runs for a specific time period and spells out tasks. "You need to look for a service provider with the ability to create a system of prevention and control, a program that goes beyond mere application of pest controls," Feldman says. The company should test the soil and have a program aimed at maintaining proper soil pH, fertility and aeration. It should promise to monitor for weeds, brown spots, slow or unusual growth and a variety of insects; this should include looking annually for grubs under a patch of sod.

NEW GRASS FOR AN OLD LAWN

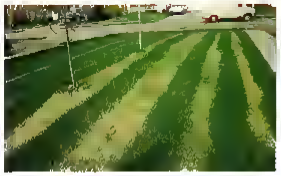
The best time to beef up a thin, weedy lawn by overseeding with the new, pest-resistant grasses is early fall. But spring sowing can work—if started early. "The later you go, the more weeds you'll have," says Michael Talbot, who owns four lawns organically in the Boston area. "You can crowd the weeds out over time, though."

For small patches, he scratches up the soil with a rake, scatters the seed and tamps it in. Then it's just a matter of keeping the soil moist until the grass sprouts.

For larger areas, Talbot mows the lawn short, then spreads any soil amendment necessary (in his area, often rock phosphate and gypsum). To break up the surface, he runs a power de-thatcher or verti-cutting mower across the lawn. Tool rental yards carry this equipment. "Then rake up all the stuff you've loosened," Talbot says. He sows seeds at the rate recommended for a new lawn, or a touch more heavily. To get them to settle, he drags the lawn with a rake, then goes over the area with a lawn roller, also available as a rental.

Talbot's final step is to top-dress with a ¼-inch layer of screened compost. He buys about a cubic yard to treat 2,000 square feet, but material from a backyard compost pile also works. "Screen it through a ⅝- to ½-inch mesh," he suggests.

Is this lawn sick—or what?

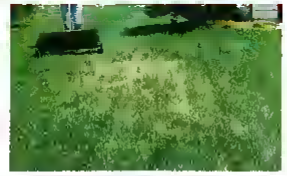


BOLD STRIPES

There's no question about which spots a fertilizer spreader failed to reach. Particularly with high-nitrogen synthetic fertilizers, uneven application can leave streaks of dark, lush turf alternating with light areas, where leaves burned. When the difference is this dramatic, there's also a good chance that the pH of the soil is not correct and that too much fertilizer was used.

DEAD PATCH

Fungal disease can kill patches of grass, but in this case the culprit is too much synthetic high-nitrogen fertilizer. A traditional approach would be to treat fertilizer burn with more careful application next time. Organic care greatly reduces the risk. Although raw manure can burn leaves, most commercial organic fertilizers are so low in soluable nitrogen that they do not.



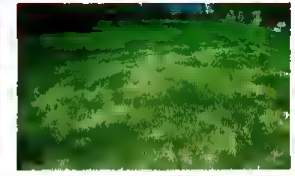
RANDOM SPOTS

Irregular areas of dead grass appear where beetle grubs have chewed off grass roots. Sometimes the damage shows up in spring when grubs resume feeding. But more severe damage usually occurs in early fall, from newly hatched grubs. Organic controls include parasitic nematodes and formulations that spread milky-spore disease. The best defense is robust turf.

PHOTOGRAPHS: © M. SCOTT CO.

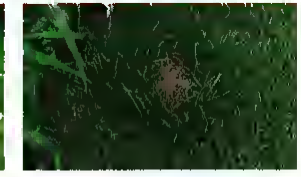
STEALTHY STEPS

A trail of footprints shows where someone crossed the lawn when it was frozen, fracturing the brittle cell walls of the grass blades. With the first mowing in spring, the damage will disappear. Freezing temperatures can also cause scattered blades of grass to turn to straw. When the lawn resumes growing in spring, the dead leaves will disappear among all the fresh, new green.



TAN CARPET

Cool-season grasses tend to brown during the summer if not irrigated. For green all season, aim for an inch of water a week. Sprinkling early in the day reduces evaporation and the risk of disease. If the lawn isn't irrigated, it will resume growing when rain returns and become green again. But during the dormant period, more drought-resistant weeds may get a toehold.



BULL'S-EYE

A dead spot, especially when surrounded by a ring of lush green grass, shows where a dog aimed. Urine kills the areas of grass it soaks, but the nitrogen it contains fertilizes surrounding turf. In the dead spots, usually only the blades die and the turf regrows. Soaking new spots with water may speed the recovery. Prevention is obvious—but not always very practical.

FOR SOURCES, SEE DIRECTORY—PAGE 166

THIS PAGE: "You have to let the stone know that you are boss," says Manuel Palos, in his workshop. "People think I'm crazy when I say that, but that stone is looking at you and challenging you." RIGHT: Palos uses a dull 8-inch chisel to skin a piece of limestone for finer carving.

Stone Carver

Manuel Palos has a dragon for your living room.

BY WALT HARRINGTON
PHOTOGRAPHS BY CHRISTINE ALICINO

The client looked pretty seedy in a baseball cap and torn pants, his head canted gewkily off kilter. But when he first walked into Manuel Palos's San Francisco workshop, it wasn't the man who caught the sculptor's eye—it was the woman with him. "She *was* stun-*ning*ly beautiful," says Palos, his English blending with his native Mexican Spanish and his acquired Italian, his sentences made distinctive by accents placed on normally unaccented words and syllables, as in: "She *was* stun*ning*ly beau*ti*ful." Palos was at a large, low table where he always keeps a dozen sculptures in progress, edging the muscle in a woman's calf or shaping the eyebrow on a boy's face. He let go of the trigger of his pneumatic hammer, and its wheezing halted. In his odd accent, he asked, "What *can* I *do* for *you*?"

"I want something on top of my fireplace like a serpent or a dragon," the man said in a deep, languid voice. Palos, figuring him for a kook, decided to play a teasing game.

"I got a better idea. Why don't I make you a huge dragon, and the fireplace will be his mouth?" Aiming to shock—and certain that this would end his game—Palos said the job would cost $60,000 to $70,000.

"Mr. Palos, here's a $10,000 deposit," the

man said, handing him a check, and left. Palos, taken aback, hurried to his office and asked his secretary to see if the man had that much money in his account. She glanced at the check.

"This is Nicolas Cage," she said. "The famous actor."

The teasing had turned. "Oh, no," Palos thought. "So now I have to come up with my joke."

Years later, as Palos tells this story on a Sunday morning, the pneumatic hammer wheezes and stone dust billows around him in his 7,000-square-foot workshop. The dragon that now frames Cage's fireplace—a fierce and magnificent 10-by-13-foot creature carved from 4½ tons of black Mexican limestone—is only one of many monumental Palos stone carvings and cement castings in San Francisco. His eight 13-foot-tall eagles look as if they might fly off the top of the Pacific Telephone building. His 9-foot-high Greek gods—Zeus and Medusa among them—adorn the Palace of the Legion of Honor. His fountains and fireplaces decorate the lobbies of the Villa Florence and Galleria Park hotels.

"I am so lucky," says Palos, who at age 60 works alone in his shop every weekend, away from the distractions of running one of the nation's most respected architectural sculpture businesses. "Very few sculptors have the satisfaction to have their work in public and lit up all night like my eagles. Even the Greeks and Romans didn't have their sculptures lit up all night—no electricity! I really enjoy my life. There are people who are born to be something and who find out early enough to enjoy the rest of their lives doing what they want. That's the trick."

Palos is seated before a chunk of French limestone he is carving into a noble lion that will sit as one of the pedestals beneath the jambs of a 1,500-pound $25,000 fireplace in a house on San Francisco's Postcard Row. In his right hand, he tightly grips the air hammer's nozzle. The fingertips of his left hand hold the pencil-size chisel bit while he turns the bit like a spindle to etch the loops of the lion's billowing mane. Palos leans into his work, his weight on the toes of his right foot. His right arm, which has carved stone for 30 years, is much stronger than his left. He wears a teal beret.

"This is how it is done, and—oh, God—it is fun!" Palos says, leaning back and letting the air hammer whine down. "I love to work. What a gift! It's bringing life to the lion. My father used to say, 'Do your best.' He didn't know anything about art, but he was an artist. He was the best shoemaker in Tabasco, Mexico."

Palos conjured up an ancient archetype of terror in his original design sketch for a massive fireplace in actor Nicolas Cage's house.

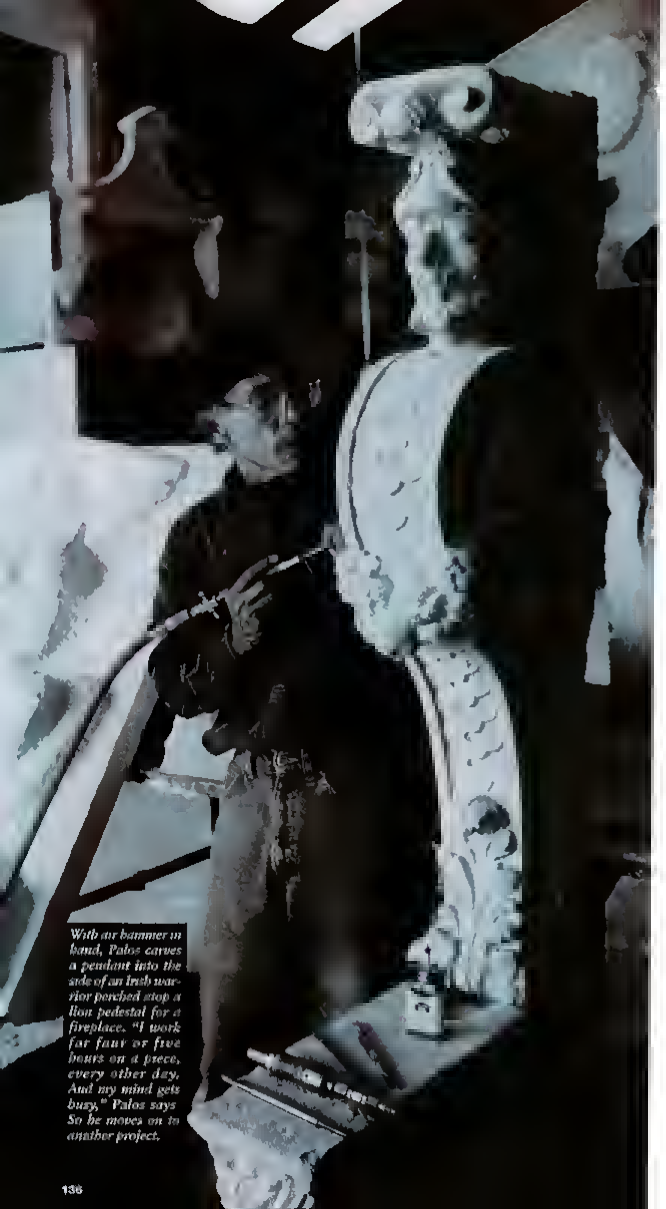
Palos immigrated to San Francisco as a young man looking for work. He became a U.S. citizen and began laboring in an architectural ornament company. He met old men—of Irish, German and Italian heritage—who had spent their lives sculpting clay models for castings and carving stone window and door arches, cornices, corbels and columns, fountains and fireplaces. In the old days, the sons of these men would have learned their fathers' craft, but no more. "They wanted to go to college, go work in a bank," Palos says. "The men had so much to teach and didn't have anybody to teach it to."

The old men taught Palos. They taught him to stand back from a stone as he carved to better see the grand sweep of his work. They taught him to work on one piece, then another, then return to the first. The lapsed time let the work simmer in the mind and eye, revealing flaws more readily. They taught him to lean on the toes of his right foot as he carved and to swing the hammer not only with his arm and wrist but also with his whole body, like a boxer who throws a right hook from the balls of his feet through his torso and arm and out his fist, hitting his mark 2 or 3 inches from his arm's full extension.

It drove Palos crazy that the old men insisted on listening to classical music while they worked. "Well, in

A 13-foot plaster of paris eagle that Francis Ford Coppola used as a prop in his 1988 film, Tucker, now stands guard in front of Palos's workshop in San Francisco. Eight copies of the magisterial eagle, cast in fiberglass and reinforced with stainless-steel frames, grace the tap of the city's Pacific Telephone building.

Cage's 10-by-13-foot dragon fireplace belches flames on command and is easily tamed by a poker. A more relentless demon stalks Palos when he works. "I have a fear inside me all the time—a fear that somebody better than me will find me out," he says. "The master carvers in Italy and Greece were probably driven by the same fear."



With air hammer in hand, Palos carves a pendant into the side of an Irish warrior perched atop a lion pedestal for a fireplace. "I work for four or five hours on a piece, every other day. And my mind gets busy," Palos says. So he moves on to another project.

about two months," he says. "I couldn't work without classical music. And now I know why. It relaxes. That music has been created with discipline. It is so well done that it lasts forever. Anything well done lasts forever." The old men convinced Palos he had to study in Italy, famous for stone carving. So Palos began spending two months every summer in Carrara, where Michelangelo cut the marble for his Pietà. Palos's first wife couldn't abide his obsession, thought he was crazy. She wanted him to work on a city garbage truck. Why not? Good pay, insurance, vacations, retirement. Instead, at 33, Palos quit his job and launched his own casting and carving business. Even the old men told him it was too risky.

"I was starving," Palos says, "but I never thought about doing it to make money. It was something in me waiting to come out. I felt compelled to let it go." By then, work had become his life. "Having your work under control, the rest of your life falls into place. Your friends and family have respect for you. And then you feel that respect too."

All around him in his workshop this morning is proof of respect deserved: the fireplace he is carving with its roaring lion pedestals and its ancient Irish warriors standing erect, carrying the mantel upon their heads, castings of the giant eagle and the Greek gods; a bowl-shaped mold the size of a spaceship that will be cast as a mansion's oval ceiling, Doric columns, cornices and capitals. In the center of the room, on the large, low table, sit the marble busts and bodies he carves just for pleasure.

"I am so, so lucky," he says.

The air hammer wheezes, and Palos leans on his toes and into his work. He is refining the lion, working with a three-toed ⅜-inch chisel bit and gentle air power, digging between the curls of the mane to make the tresses jump out in relief. Later, he will run a sharp, delicate bit over the sculpture's entire surface to remove the crosshatching toe marks left by the tough-cutting chisels. Except for the air hammer, which has cut carving time 10-fold over hammer-and-chisel work, stone carving is much as it was centuries ago.

The rough stone must be skinned by driving a 2½-pound hammer onto the head of a 10-inch carbide-steel-tipped chisel held loosely so that it will ride with the natural grain. After skinning, the carver draws in the stone, starting with bigger chisels and more air power to rough out his design. He then progressively works his way down to smaller bits and less force, until he's where Palos is today. The fireplace—with its lion manes, snarling mouths, paws, muscles and sinew, its warrior faces, beards, teeth, eyes, ears and helmets; its garlands, acanthus leaves and flower buds—has taken two months of work. Smoothing its surface and sharpening its details will take him two more weeks.

"It's not all inspiration," Palos says. "It's work, dedication."

Palos works on a 6-by-6-inch square of mane for an hour, getting it perfect. Then, still following the advice of the old men who taught him, he leaves the lion to simmer in his mind and eye, moves across his workshop and leans into a small marble bust of a young girl that is emerging from an 8-by-8-inch block of pink marble that Palos shipped home from Italy. "You'll think I'm crazy, but I look at her, and I see a smile, a little smile." The stone only hints at the girl's face now, as if it were shrouded in tomb cloth. But in a few minutes, Palos has drawn a chin and shaped a cheek. He then works on the smile that only he can see.

For the crowning touch on a garden fountain that Palos carved from marble, he sculpted a 14-inch-high cherub holding a water-spouting fish. "I brought something alive—creating, creating, creating," he says. "What a gift!"

"Three hundred years ago," Palos says, "there was no room for sloppiness or 'that's good enough.' Well done was perfect." And that is what Palos hopes to achieve, although he believes that many clients don't know the difference between mediocrity and perfection. And, Palos says, the financial pressure to cut corners is great. He once took a job carving a monument for a California town and underestimated the time it would take. He told the town fathers that he would end up losing $20,000 because of the extra time needed to finish the monument to his satisfaction. "I will have to do it for free," Palos said, "but I will have to do it." To his relief, the town fathers paid the extra money.

He spits on the girl's marble cheek, rubs off the gray dust with his fingertips—and suddenly her skin shines pink and bright with a subtle white grain radiating through it. Palos is elated. It is a thrill that, even after 30 years of carving, is fresh every time. He believes it has something to do with touching the wonder of creation. A decade ago, he was in Italy, working on a woman's torso in Portuguese marble. As he carved, he realized he would not have enough stone for the left breast. In an instant, without conscious thought, Palos dug into the stone and indented the breast as a reverse image, to the later amazement and awe of his fellow carvers. "I felt like I had an extra gift that God gave me to create that beauty," Palos says. That wonder has never faded and, when he looks at the torso today, he still thinks, "How did I do that?"

Palos feels the same awe about Nicolas Cage's dragon. He went to Mexico to select 13 giant pieces of limestone. He drove the truck that carried the stone back to San Francisco, where he began carving the dragon's fiery mouth and fangs, then moved up to its flared nostrils and evil eyes. It took six months. But, as Palos says, anything well done lasts forever. And sometimes he ponders a time 200, 300, 1,000 years from now when San Francisco may lie in ruins, and rising forth will be his dragon. What will they make of it? A giant talisman? A rendering of God? Or the devil? An altar for sacrifice? Perhaps Cage's fancy and Manuel Palos's joke will turn out to be a mysterious Stonehenge from our time.

This morning, Palos will work on the girl's face a while longer, until anyone who looks will see her smile. Then he will return to the lion's mane or to the faces of the Irish soldiers of his fireplace—or to the sitting woman, the turbaned head or the muscled back he sees in several pieces of still uncarved marble. "I want to someday die happy with my sculpture and remember how I did it all," Palos says. "Resting is not enough for me.

"I have to keep carving, keep carving." ■

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Kodak EPY 6271

bocce*bella*

A family builds a court to play one of the oldest games known to man

BY JEANNE HUBER

Because Patricia Marvin grew up with seven brothers and sisters, married into an Italian clan and has four children, she qualifies as an expert in the demanding art of staging get-togethers. "If you have a family, a big family, you know how it goes," she says. "You might go long periods where you don't see any of the relatives. Then you seem to see them almost too often. It gets to where you're asking: 'What have you been doing—in the last two weeks?'"

A year ago, she contemplated the string of upcoming graduations for her son and daughters, now 14 to 22, and the celebration that she and her husband, Ron, wanted for their own 25th wedding

PHOTOGRAPHS BY KIT LATHAM. STILL LIFES BY MICHAEL GRIMM

THIS PAGE: *While waiting for a load of stone dust to arrive, contractor Ralph Dellatto puts a corner to good use, which inspires the court's owner-designer, Patricia Marvin, center, to add horizontal ledges for people to sit on.* OPPOSITE: *A clutch of balls represents the many incarnations of bocce. Clockwise from top: an Italian confetti design that blurs into stripes as it rolls, a slightly elliptical lignum vitae antique made for bowls, the English game, stainless steel for pétanque, the French version, a wooden pallino, the target in bocce, brass, required by one of the international bocce federations, and plain plastic, similar to the material in bowling balls.*

1

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FLAT AND HARD

1 *Crew members scoop out a level base, intending to make room for 3 inches of gravel and 6 inches of stone dust—standard insurance against a soggy court. But they find only fast-draining sand, so they decide to skip the layer of gravel.*

2 *Contractor Ralph Dellatto and excavator John Shaw check the level of a 2-by-12 sideboard. Crosspieces of 2-by-4 prevent the sides from bowing in.*

3 *Plywood cleats hold butting sideboards tight, and 2-foot sections of ¾-inch galvanized pipe, pounded about 18 inches in, tie the frame to the ground.*

4 *Maneuvering his front-end loader onto the court, Jim Sullivan dumps stone dust in a nearly level layer.*

5 *Just a bit of raking fills in the court around edges the front-end loader can't reach.*

6 *Shaw compresses the surfacing to reveal low spots. He helps fill them, goes over the court again and hops off the roller to join an impromptu game inaugurating the court.*

anniversary. Their acre of woods, lawn and deck just north of Boston began to seem somehow inadequate.

"I sure don't want more lawn," Patricia remembers thinking as she pondered how to pep up the place. The Marvins ruled out a basketball court (a magnet for jocks but useless to others), horseshoes (fun but not for little kids) and a swimming pool (too much work and too much worry that a child might drown). But bocce, they thought, bocce is beautiful.

The basic game is so simple that even kids can play after just a few minutes' instruction. Each team tosses or rolls four softball-size balls so they wind up as close as possible to the target *pallino*, about the size of a squash ball. The game challenges participants to loft shots of 50 to 70 feet that land within 2 feet of the target. But most important, from the perspective of backyard players, is the "very significant social interaction to this game," says Ken Dothee, who headed the United States Bocce Federation for eight years. "Your competition is standing right next to you and, as often as not, you're playing over a glass of wine. Or maybe you're discussing the upcoming weekend while the barbecue is warming up."

Daniel Dellatto and his father, contractor Ralph Dellatto, load up for the first game.

A few decades ago, bocce was the sport of Italian immigrants, mostly men who played in backyards or at social clubs as a way of keeping the old culture alive. The U.S. Bocce Federation and the International Bocce Association widened the audience by encouraging parks-and-recreation departments to build courts. The groups have won recognition of bocce as a Special Olympics sport, and they campaign to have it added to the summer Olympic games. "This renaissance started perhaps 10 years ago," Dothee says. "Now it's growing faster than nouvelle Italian cuisine." Indeed, celebrities such as *60 Minutes* correspondent Morley Safer and fashion designer Cynthia Rowley have courts in their backyards.

One bocce hub is the San Francisco Bay Area, especially Martinez, where Dothée

lives In Massachusetts, Rico Daniele has been boosting the game for years, adding a line of bocce merchandise at his family-owned deli and self-publishing *Bocce: A Sport for Everyone*, a book that lists organizations that include bocce—or that he thinks should include bocce—among their activities His brother-in-law Mario Pagnoni wrote another book, *The Joy of Bocce*, which insists, among other points, that bocce etiquette requires the losing team to buy drinks for everyone.

While Millie Porretti and Gina Sementelli strategize from the sidelines, Lynne DeVito tracks her ball as it rolls toward the pallino In competition, players must stay within 12 feet of the backboard for rolled raffa-style shots, released close to the ground, and within 22 feet for lobbed pop shots, called volo

The Marvins discovered the game a decade ago, during a family vacation in New Hampshire When they saw that their lodge had a court, they divided into two teams, captained by Ron and the oldest child, Matt, then 12 "Julianne was only 4 or 5, but even at that age you could keep the kids focused," Patricia says. "The play was so even that it came down to the last shot of the last game Ron took his shot, and it was good Then Matt made a shot that banked off the side and sprayed the balls, and he won It was an extraordinary event in the family's history And of course the story was embellished over the years."

On other vacations, the Marvins staged a rematch whenever they happened upon a court When they debated what to add to their yard last year, bocce came up again They liked the way it dovetailed with their increasing interest in family roots "We went to Ireland for Patricia's traditions," says Ron, an orthopedic surgeon "And the summer before last, we went to Italy That got me going."

Patricia called Ralph Dellatto, a general contractor who had built a two-story addition for the Marvins' house several years ago Dellatto had grown up playing bocce in Boston's Italian neighborhood, the North End. As a child, he'd played on *paisano* teams composed of children from different parts of Italy Years later, he would stop by courts on his way home from work to "watch for about half an hour and unwind."

The Marvins' court was Dellatto's first, so he bought a couple of books, and his clients phoned Daniele for extra advice. Patricia's first plan called for leveling part of a slope at one side of the backyard, but Dellatto calculated that earthmoving alone would cost $4,500 Instead, he and his son, Daniel, built the court in a flat part of the yard, trucking in sand to fill septic lines abandoned during the remodeling "By putting it there, we cut the cost right in half," Ralph Dellatto says

A court must above all be level and firm "You want to make sure you have a surface that is relatively hard and will remain such with minimum maintenance," Dothée says. "Don't put in sand—you will almost guarantee a soft court. You may be able to wet it and pack it down and play one game, but at the end of the day you will have a soft court again." Crushed oyster shell, ground limestone and granite and stone dust from quarries are all popular because their sharp edges make them pack better than sand, which is rounder. "It's what's indigenous to your part of the country In Italy, they use powdered marble."

Court size varies too. The International Bocce Association based in Utica, New York, stipulates 12 by 60 feet The U S Bocce Federation, which operates out of Martinez, recommends the court size used in international play 27 5 by 4 meters, roughly 91 by 13 feet

Of course, kids in Italy realized centuries ago that cobblestone alleyways make good courts So do backyards Ron grew up watching his grandfather play bocce on a makeshift court behind his house in Newton, Massachusetts Besides the lawn, the court incorporated one curb of the driveway, allowing balls to bounce off "Having bumpers makes the game a lot more fun because you can angle shots off the sides," Patricia says.

At the end of a round, players gather at mid-court to get an accurate overhead view of where the balls have landed Only one team may score, gaining a point for each ball that's closer than any of the opposing team's balls to the target

For their court, the Marvins stretched out garden hoses until they found boundaries that looked right They settled on a court 12 by 60 feet aligned with their deck and within view from the kitchen window. "I figure that's how I'll see it most of the time," Patricia says "We debated whether to make it 10 or 12 feet wide But you don't want that tunnel effect Plus, for entertaining, 12 feet works better if I want to set up tables on it."

The construction took two days At the end of the first day, the Marvins walked around the site after dark The court already felt magical They planned to add lights so they could play on summer nights.

Some players employ fingers shoe lengths and a bit of bluff to call point balls, sticklers opt for specialized tools From top a pen size telescoping caliper; a combination tape measure, caliper and scorekeeper; and a stainless steel folding rule with metric increments, the preferred measure for international competition.

A month later, Ron's family came over to celebrate his birthday and inaugurate the court Children played first, then the old men After that, it was a jumble of kids, moms and dads Ashley Manning, 11, pronounced the game more fun than swimming, and Robby Williamson, also 11, said it was "much better than basketball because you don't have to do much to get ready for it." Watching her two children play, Gale Sementelli relished the sight of fathers coaching their children "I love how it promotes male bonding," she said

Sitting in the dappled shade on the sidelines, Ron's 70-year-old aunt, Millie Porretti, reminisced about her childhood, watching her father play against his friends "It was a very serious game It brought so many families together."

Patricia says the court accomplished everything she had hoped: "It brought out the athlete in everyone And it opened up a whole new dimension of conversation, a lot of different topic areas. Who in the family does *this* well? Who does *that* well?" Without a doubt, bocce was in their blood Which perhaps explains why it wasn't until after dark that anyone noticed the Italian feast that had been setting untouched for hours Only then did everyone's attention shift from the court to the table ■

TOP PHOTO BY STUART BRINKIN

Although bocce has taken many forms over the centuries, in the United States it's often thought of as the sport of Italian immigrants such as those pictured here, playing in a New York City park

The Birth of Bocce

Tossing balls toward a target is "probably the oldest game known to mankind," says Ken Dothée, former head of the United States Bocce Federation. Indeed, as early as 5000 B C , the Egyptians played a form of bocce with polished rocks. The game made its way to Greece around 500 B.C The Romans learned the game from the Greeks, then introduced it throughout the empire.

The sport was so popular in medieval Europe that the Catholic Church condemned it, saying it promoted gambling. French and English kings also tried to ban the game, because it took too much time away from archery practice and other military exercises. But prohibitions against play among the nobility had been relaxed by 1588, when Sir Francis Drake, according to legend, refused to set out to defend England against the Spanish Armada until he finished a game.

The sport first came to America in the English version, called bowls from the French *boule*, meaning ball. In bowls, the balls weigh about 3 pounds and are either elliptical or weighted to make them arc when released Players compete not on stone dust but on close-cropped grass—the origin, some historians say, of the modern lawn. One early American playing field was Bowling Green at the southern tip of Manhattan, and George Washington built a court at Mount Vernon in the 1780s.

A century later, bocce enjoyed a resurgence among Italians who had immigrated to the United States. Also spelled boccie or bocci, the name comes from the Vulgar Latin *bottia*, meaning boss. There were as many versions of the game as there were towns the immigrants had left. "The 'right' way to play was the way your dad played," says Dothée. "The other ways were the wrong way. It was sort of nuts for a long time."

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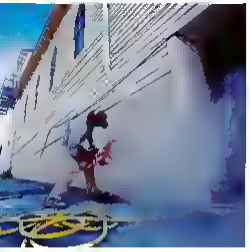
park place

The crew from *This Old House* help a San Francisco couple transform a basement into a two-car garage



Mark Dvorak is driving up and down the car-lined streets of Eureka Valley. All he wants is a spot to park. But this is San Francisco, where space for cars is so tight that ice cream melts through grocery bags as drivers circle the block, where diners unable to find parking forfeit restaurant reservations, drive home famished and order in.

The parking crunch is such a desperate—and widely shared—obsession here that anybody can get off the hook for being late by invoking the couldn't-find-a-place-to-park excuse. In fact, San Franciscans tolerate inconveniences bordering on the absurd. One town house has a first-floor garage with six spaces. Owners stack their cars one in front of another in two rows. Which results in elaborate, Rubik's Cube-type maneuvers whenever any car not parked next to the door needs to break free. The neighborly solution: Each tenant gets six sets of car keys.

Dvorak finally double-parks beside a large bin for construction debris in front of a church that he and his fiancée, Laurie Ann Bishop, are converting into a house. He

BY JACK McCLINTOCK PHOTOGRAPHY BY HENRIK KAM

OPPOSITE, FROM LEFT: *Using a circular saw with a diamond-tipped blade, a worker slices through the foundation wall. Then the crew joins in with jackhammers to punch an opening for the garage door. Thus, the batcave is born.*

Because the church turned house covers every inch of its corner lot, the new garage entrance must open directly onto the street—a foot above the basement floor.

With the city inspector's permission, Annuzzi's General Engineering excavated the street and reconfigured the public right-of-way so that cars can go in and out of the garage with ease but rainwater flows away from the door, as a test demonstrates.

Once the Batcave opening is framed up, workers install rollers in the side hinges so the door can glide open and closed along metal tracks.

rounds the corner of the building and confronts a gaping hole in the wall. "Ah, the Batcave," he says.

More precisely, it's Dvorak and Bishop's future parking space. With the help of *This Old House*, the couple are putting a garage in the only feasible spot on their property—the above-ground basement. Dvorak and Bishop were delighted when a structural engineer made the process sound easy—just cut a hole in the wall, reinforce some beams and joists, move a few posts, add an overhead door, then drive right in. The $30,000 price tag, on the other hand, did not enthrall them, even though a garage would add $50,000 to $100,000 to the house's value. But after recalling the countless hours they'd spent circling the streets of San Francisco in exasperation, there was no question. They would—they must—have a garage.

Contractor Dan Plummet propped up the house with temporary headers and posts, then sawed through the clapboard sidewall and the concrete foundation. After that, however, things got complicated. The basement floor was a foot below street level—there would be no driveway—which meant reshaping the street so cars wouldn't have to jump a curb to get in and out of the garage. Because the project involved excavating, reconfiguring and repaving a public right-of-way, Plummer had to submit a plan to the city inspector.

While waiting for the inspector's verdict, Dvorak and Bishop pondered a second level of convenience. There were no interior stairs connecting basement to house. "Some people spend $50,000 for a garage and still have to go out the garage door and enter the house through the front door—usually in the rain," Dvorak says. The couple wanted to stay dry, but where to build stairs? Inside the church house, the altar platform stood like a theater stage between the sanctuary (now the living room) and the kitchen. Two hallways bypassed the platform, one on each side, to connect the sanctuary and kitchen. Dvorak decided to sacrifice one for a basement stairway. So foundation contractor J. Gregg's crew started digging.

Meanwhile, Plummer's crew inserted 8-inch steel I beams to replace the basement's old wooden beams, which were composed of 2-by-6-inch boards nailed together in sets of three. Although the new beams cost 2 inches of headroom, they still allowed 1 foot of clearance for Dvorak's sport utility vehicle. Squeezing two cars into a space designed for none—through a 9-foot-wide door—presented the biggest problem. A steel beam spanning 15 feet down the center of the garage created an L-shaped space that, however cramped, would accommodate the two cars, one behind the other. Drive in, hang a sharp left. Yes, inconvenient to move Car Two to get out Car One, but better than no garage at all. Against the rear wall, there was even room to wedge in a washer and dryer side by side.

Building the stairs proved more complicated still. The crew cut a hole in the concrete wall in the rear of the basement, revealing a solid mass of earth, then peeled up the moist, heavy clay like rough fudge, using the spade blade of a jackhammer, and hauled it out in wheelbarrows. It took four days to dig a 5-foot-wide ramp from the basement's rear wall to the kitchen—creating a clammy and forbidding earthen passageway hung with bare bulbs like a prison-camp escape tunnel.

In the kitchen, the men on Plummer's crew got a surprise when they broke through a 2-inch concrete slab at the top of the stairs. In lieu of a true foundation, the slab—known in San Francisco as a "rat slab," designed to keep burrowing rodents at bay—had been poured directly on the ground under the original wooden floor. The kitchen's outer wall rested on this slab and sat just 10 inches from the house next door, leaving too little space in which to apply exterior siding. When Plummer's men removed the interior wall paneling, they saw a grid of bare, rotted studs—and through it the clapboard wall of the neighboring house. Carpenters had to cut off the rot, attach a new pressure-treated sole plate to the bottom of the studs, pour a concrete foundation and stem

The Watcher

Archie Green likes sitting in the sun at his south-facing window and observing the church-to-house conversion under way on the corner. Not that he thinks much of it. Archie, 80, and his wife, Louanne, remember the Church of Jesus Christ of Latter Day Saints as the center of their working-class neighborhood when they arrived in 1950. "The neighbors were housepainters, a lineman, a longshoreman, an ironworker, a boilermaker," he says. "Kids used to play kick-the-can in the street. Once our son David threw a ball and broke a stained-glass window, and a church member came over, very polite, and asked David to work off the damage by sweeping up the church."

After dwindling to 10 families,

the congregation sold the building, which became a predominantly gay and lesbian synagogue. The neighborhood's character changed. Now, Archie says, "there's a retired wine merchant, a computer company owner and two lady lawyers."

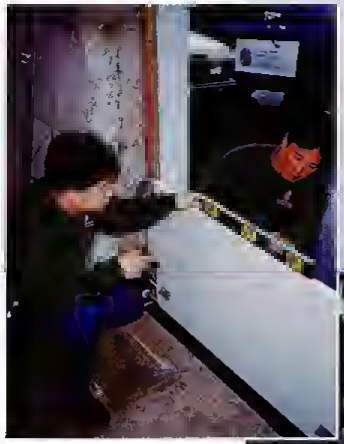
Archie's own status changed too. A shipwright and former labor organizer, he earned a Ph.D. from the University of Pennsylvania, taught folklore and labor history and wrote about the historic preservation of factories, steel mills and shipyards.

There's nothing wrong with converting churches into houses, he concedes, except that neighborhood continuity is lost. "Once the stained-glass windows are changed, little—except for the bell tower—is left to remind people of the church."

wall under that, then build panels of exterior redwood siding that they could slide into place from inside.

Then Gregg's foundation guys could build the staircase, 3½ feet wide and rising 7½ feet from garage to kitchen. Starting at the bottom of the ramp, they wired together a trellis of steel reinforcing bar and attached it to the sides of the opening in the retaining wall. They poured concrete into the network to anchor the staircase. When the mix set, they sprayed the sidewalls with cement. Gregg's workers used screws designed for concrete to attach wooden form boards to the ramp, making a cascade of forms into which they poured more concrete. When that set, they removed the forms and troweled the treads and risers smooth.

To everyone's relief, the city inspector granted permission to excavate the street. A team from Annuzzi's General Engineering went to work digging up nearly 450 square feet of roadway starting 30 feet uphill from the garage door and extending 9 feet to the centerline of Danvers Street. With a backhoe, they lowered the street nearly a foot and shaped it so that cars could drive easily into the basement garage but rainwater would drain away. To make certain, Plummer and *This Old House* master carpenter Norm Abram tested the slope with a hose. They marveled at how the water ran down the street and then, as it approached the garage door, suddenly turned away from the house. "They did a beautiful job," Dvorak says. All the Batcave needed then was a door. Plummer's crew framed the doorway and sent a batch of primed redwood siding—to match the house's clapboard exterior—to Garage Doors, Inc. of San Jose, California, where workers built the four-panel custom roll-up door.



Workers from Garage Master stack the garage door panels, making sure they're level, then hinge them together along the vertical tracks in the frame.

And now Garage Master, a San Francisco–based company, has arrived to install the door. The team first scribes and trims a sliver of a bottom panel to follow the street's slope. This odd-shaped "trailer" is attached with hinges to the first of four regular panels, which the workers stack and hinge together. They slip rollers into the hinges so the door can move along vertical tracks in the door frame and horizontal tracks hung from the ceiling. Finally, they mount powerful springs and crank them to the proper tension. Once the automatic door opener is installed, the Batcave is ready for cars—and Dvorak and Bishop are ready to celebrate. "In other cities, people invite friends over to see the new kitchen or bathroom, and we'll probably do that," he says. "But we'll also invite them downstairs and show off the new garage." ■

To owners Mark Dvorak and Laurie Ann Bishop, the finished garage door is a work of art. Covered in primed redwood siding, the door has a short hinged panel along the bottom that is cut at an angle to match the slope of the street. Known as a trailer, the component is unique to garages in hilly San Francisco.

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playhouses

WHAT DADS ARE SUPPOSED TO BUILD IN THE BACKYARD

The playhouse I built for my children when they were small was a monstrosity, a ramshackle assemblage of plywood and 2-by-4s that, for some long forgotten reason, I decided to paint an urpy shade of green. It's gone now, destroyed years ago by my own hand on the orders of my wife, but I can't quite put its memory to rest. Every now and then, when my brain is running at a nostalgic idle, I find myself recalling that ungainly playhouse with a distinct pang.

It was the only thing I ever built. Up to that point, my biggest construction project had been a plastic model of a space shuttle that I put together in an attempt to preserve my sanity while waiting for the way overdue birth of our third daughter. I am not a carpenter. Nor am I a handyman. From time to time, I putter around the

BY STEPHEN HARRIGAN

MONTANA HISTORICAL SOCIETY

As the only child at the Civilian Conservation Corps Camp Nine Mile in western Montana in 1937, Lou Marilyn Vierbuss had no playmates nearby, so the camp crew worked in secret to build the solitary 4-year-old a log cabin playhouse. The Vierbusses moved to Seattle in 1942—but not before Lou Marilyn printed the words Keep Out on a piece of paper and nailed it to her cabin's front door. A half century later, the sign is down, and the U.S. Forest Service has restored the log cabin for the benefit of any playful youngsters who visit the camp.

house, looking for a crack to caulk or a window screen to straighten, but I putter poorly and without conviction.

Years ago, however, a friend shamed me into buying a circular saw on the principle that it was one of those objects, like a pocketknife or a Dopp kit, that real men invariably and unthinkingly possess. That saw got the better of me. When I brought it home along with a commanding pair of plastic safety goggles, I felt an uncharacteristic impulse to create something—something out of wood. I thought about a big plain hulking table, but I knew my chances of getting the legs to come out the same length were remote. A deck was even further beyond my capabilities, and a sandbox—which I might have been able to pull off—held no allure. But one day, as I watched my 5-year-old daughter and her friend having a tea party in a kind of bower formed by the interlacing ligustrum branches in our backyard, I decided that what my kids needed—and what I needed to build them—was a childhood sanctum. I wanted to make a structure as mysterious and serene as that leafy hollow where they were drinking their Kool-Aid.

I was ceaselessly in search of such places when I was a child. I draped sheets over rows of chairs to form dark tunnels that I could roam through like a gerbil, drenched in the strangeness, the infinite novelty of an altered environment. The forts and tree houses and hideouts that my friends and I constructed out of cardboard and scrap lumber had an appeal whose precise timbre eludes me after all these years, but I can still remember the intense satisfaction of simply sitting in these places, feeling impossibly remote and secreted away.

I never had a formal playhouse, although I remember waiting out the endless weeks for the arrival of a "log cabin" that I had ordered from an ad on the back of a comic book. The picture in the ad showed boys in coonskin caps, clambering in and out of the cabin through a stout wooden door in which the shafts of Indian arrows were embedded. When the log cabin finally appeared at my own door, however, it left me mute with outrage. The fabulous playhouse depicted in that comic book turned out to be merely a sheet of plastic printed with images of rustic unpeeled logs, the directions said I was to drape it over a card table.

Was it to triumph over the memory of this childhood fraud that I threw my adult self so heartily into the construction of a bona fide playhouse? Off I went to libraries and bookstores, searching for schematics and specifications. But I quickly realized—looking at these plans for miniaturized versions of Queen Anne houses and Tudor mansions with their cute little dormers and gables and other intricate flourishes—that I could no more build one of these edifices than I could build a Saturn V rocket and fly to the moon.

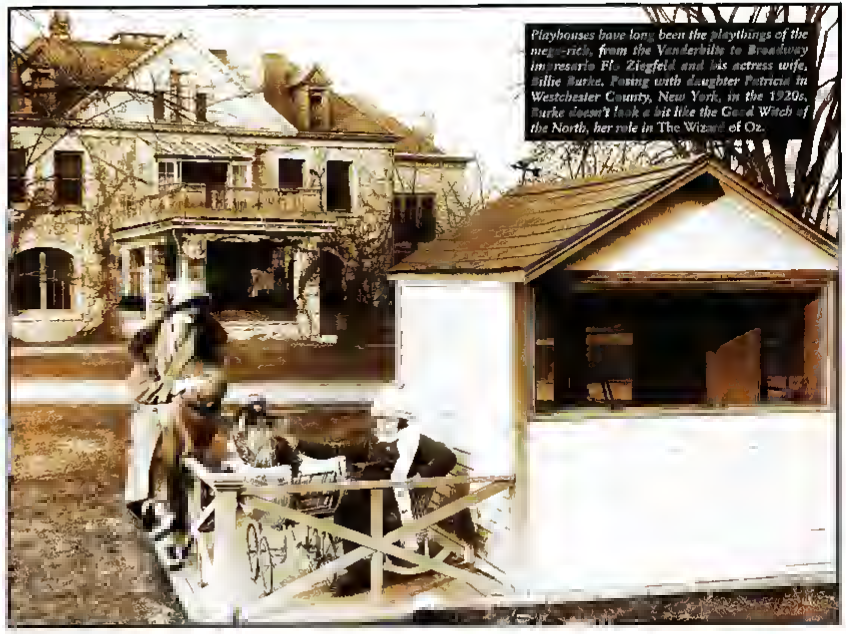
What I could build, I thought, was a big box. I knew my capabilities well enough to understand that my playhouse would have no architecture, but perhaps, I wistfully reasoned, it would have some sort of style nonetheless. Awkwardly, I drew up the plans on a piece of graph paper. The playhouse would be a big square with an opening in front that was only 2 feet high to discourage trespassing adults. (An actual door was out of the question, I've never been good with hinges.) There would be two cutout windows and a ladder leaning against the inside of the back wall and leading up through a hole in the ceiling to a kind of roof garden, which I would enclose with a foot-high safety railing. And then my grand whimsical statement: a slide by which children could thrillingly descend from the roof to the ground.

As a writer, I am accustomed to the often great distance between the thing envisioned and the thing produced. This gulf grows immeasurably wider when you are not very good at your job. I don't recall how many afternoons and weekends I spent in my backyard, trying to wrestle those 2 by-4s and sheets of plywood into some sort of vague replica of the fantasy residing in my head. I do know that I was not a pleasure to be around. My children, excited at first at the prospect of watching their daddy build them a playhouse, soon learned to give a wide berth to the snarling goggle-eyed monster he had become.

But there at last the thing stood at the edge of the yard. Its faults—in terms of aesthetics and craftsmanship—were compellingly apparent. The windows, meant to be square, were somewhat trapezoidal. The railing around the roof was no more than a crude stockade, and there was a conspicuous gap where the slide was supposed to be but wasn't. The gap, I soon realized, would always be there because I didn't have the slightest idea how to build a slide, and there was no store-bought slide that would match the peculiar dimensions I had thoughtlessly created. Overall, the playhouse looked less like the product of weeks of intense deliberation and labor than like some kind of eccentric emergency shelter.

Shirley Temple's bouncing ringlets and girlish giggle made her America's favorite moppet as well as earning her a special, miniature Oscar in 1934. Offscreen, the Poor Little Rich Girl still took childish pleasure in playing house.

GILLIVER PICTURES



Playhouses have long been the playthings of the mega-rich, from the Vanderbilts to Broadway impresario Flo Ziegfeld and his actress wife, Billie Burke. Posing with daughter Patricia in Westchester County, New York, in the 1920s, Burke doesn't look a bit like the Good Witch of the North, her role in The Wizard of Oz.

In 1932, the Dow Jones hit its Depression low and President Roosevelt announced the New Deal, but summer was still simple in Minnesota for kids who had a playhouse with a wading pool out front.

TOM BROWN BIRTHDAYS: BOYTOWN MINNESOTA HISTORICAL SOCIETY

On the other hand, it was strong. It did not wobble, as I had feared it might, when I leaned against it, and I could stand on the roof and jump up and down without the slightest fear of crashing through.

And the kids took to it. I like to think that if it had resembled the illustrations in the books I had consulted—a charming little junior cottage with wraparound porches and trellises and flowerpots under the windows—my children might have perceived it as something to be admired rather than exploited. Instead, I believe, it aroused their sense of adventure. Not long after I built the playhouse, they climbed up on the roof and took voyeuristic pleasure in observing our neighbor's backyard wedding. And I would eavesdrop on them as they flitted with imaginary danger on that same roof, daring one another to eat the "poison" berries from the swaying branches surrounding them or to leap up and try to grab the telephone line that ran high above their heads.

"When will the slide be here?" they kept wanting

When Julia and Katherine Murphy were growing up on Peachtree Street in Atlanta before World War I, their playhouse had rose wallpaper, a tiny telephone and a birdcage. In 1980, the little house was donated to the Atlanta History Center. Visitors weren't allowed inside, but they could peer through the windows at antique toys including a deerskin rocking horse, a cast iron stove and a German tea service for six. The museum has since closed the playhouse because of structural decay but is planning a $25,000 renovation to replace rotting wood and install a new copper roof.

LEFT: ATLANTA HISTORY CENTER; TOP: ELLWOOD HOUSE MUSEUM. ILLUSTRATION (ROUTLEY OF MORGAN ASSOC INC. AND WEBB. BOTTOM: RICHARD NEWMAN.

The Little House at Ellwood Park was built in 1891 as a parade float promoting the Leonard Atkinson Shoe Company of DeKalb, Illinois. Since then, the house—notable for its intricate gingerbread gables and scalloped shingle roof—has been moved a dozen times and belonged to a handful of DeKalb families. "It was one of the joys of my life," says Ellen Oderkark Froelich, who shared the playhouse with her two sisters in the 1940s. She had barely outgrown it a decade later. "My husband proposed to me on the front porch."

to know. From time to time, I would try to puzzle out how to follow through on this missing element, but my brain was just not mighty enough to wrestle with such a complex problem. For that reason, the playhouse always seemed unfinished to me, and I could not look at it without being overcome by a gnawing sense of my own limitations. At the same time, the satisfactions of watching my kids crawl in and out of its doors and windows or dawdle for hours on its rooftop were unexpectedly deep and abiding. I felt a thrilling sense of validation when a 4-year-old school friend of one of my girls, visiting our house for the first time, walked into the backyard and said, "Wow!"

"Tell me again why you made me tear it down," I said to my wife the other night as I stared at the picture of the playhouse in one of our photograph albums.

"Why," she said, "because it was substandard."

She was not being cruel, although her observation did in fact shatter my fragile craftsman's ego. She had always feared, she gently explained, that a kid might crash through the railing I had built on top of the playhouse. Also, we had been in the process of moving and putting our house on the market, and she was worried that this big green eyesore in the backyard would diminish the value of the property.

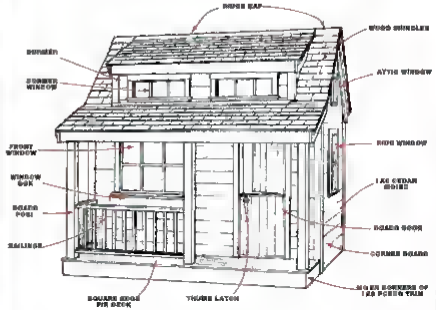
No doubt she was right. And it is only fair to admit that, at the time of our move, the playhouse was three or four years old and, having lost its novelty, was neglected. Every few months, I had to grab a broom and knock down the cobwebs. So when I finally took a hammer and knocked the playhouse itself down, I had the sense that its time on earth had duly passed.

"You remember the playhouse, don't you?" I plaintively questioned our oldest daughter, a college junior now, when she walked through the living room that same night on her way to seek a cappuccino.

"The playhouse?" she said. "Of course I remember it. It was lime green—no, pea green. And it had a door that only children could fit through. And it had stairs inside going up to the roof."

With that brisk recitation, she opened the front door. Perhaps it was the vaguely crestfallen look on my face that caused her to turn on her way out and address me in a consoling voice.

"Oh—and one other thing," she said. "I remember being very impressed that you built it." ●



Norm's Pint-Size Victorian

"Anyone who can build a deck off the back of a house has the skills to build a playhouse," says *This Old House* master carpenter Norm Abram. In his *New Yankee Workshop Kids' Stuff* (Little, Brown), Norm provides plans for the 56-square-foot Victorian. (Complete plans also come with a video, $39.95; 800-892-0110.) Despite some elaborate features—cedar roof shingles and tongue-and-groove siding, dormer windows, a Z-braced Dutch door and a window box for flowers—the playhouse takes just four weekends to build. A miter box and a router with a flush-trimming bit will make the work go faster, but an amateur can get by with a circular saw, handsaw and drill. Making a playhouse safe for kids, Norm advises, should be a builder's primary concern. ■ Pick a site in plain view of the main house. ■ Choose polycarbonate unbreakable glass for windows. ■ Don't use pressure-treated wood in exposed parts of the building. ■ Round over balusters and other sharp edges. ■ Space the porch railings 3 inches apart or less, close enough not to trap small heads. ■ Trim the nails used to secure shingles so points aren't left sticking through the ceiling. ■ Get children involved with hammering and painting, but leave power tools to the grown-ups.

After Norm Abram nails his last shingle and paints his last bit of trim, the children set to work. From left, Norm's granddaughter Kayla Pitard and T.O.H. director Russ Morash's granddaughters Sophie and Alhe Evarts make sure Norm's playhouse is fit for games of house and hide-and-seek. Sophie and Alhe's mother, Vicki Evarts, approves, too. "Not only is it a functional playhouse—it's a nice-looking garden ornament."

FOR SOURCES, SEE DIRECTORY—PAGE 182

ACE
When you don't exactly have a green thumb..
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Margaret
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ASK NORM

"Try my old-fashioned cleaning method for brass and copper."

NAIL DETECTOR

I once saw you use a small handheld device to detect nails in old lumber. Can you tell me where to get one? I plan to run some salvaged lumber through a planer and want to be sure it's nail-free so I don't damage the blades.

ROBERT JUDAY, *Fortis, Kan.*

I have what's called a hand scanner or scanning wand, the same metal-detecting device that security guards use at airports. You can get one by mail order for about $150, a small investment, given the cost of sharpening and replacing planer knives. By the way, you should take your scanner along when you're buying old lumber.

TOP BRASS

How do I get old tarnished brass to polish up properly—so it has a warm glow instead of a tacky, brilliant gleam?

PIA DAVIS, *Shady, N.Y.*

Reddish brass, which is high in copper, tends to give a warm glow while yellowish, low-copper brass naturally buffs to a high house-proud gleam. There's not much you can do about the gleam except avoid using metal polishes containing fine abrasives, which produce a higher shine. Or you could try an old-fashioned cleaning method. Mix ordinary table salt and warm white vinegar, then apply the solution with a rag. This will often clean copper almost instantly and leave a soft satin glow. With brass, prolonged soaking may be necessary. One note of caution: The salt-vinegar mix is acidic, so you'll need full-face protection, rubber gloves, adequate ventilation and running water for rinsing.

PORCH PROTECTION

We're thinking of putting a front porch on our house. We want it to have a wood ceiling and floor, both painted. We assume grandpa used pine. Any suggestions?

JANEEN JENSEN, *Del Mar, Calif.*

Using wood outdoors in ways that expose it to standing water can create problems. Tongue-and-groove bead board will give you a nice look for a porch ceiling, but decking is another matter. If you insist on wood, a good exterior material like western red cedar or redwood will hold up well. If you use fir, protect it with a solid-color deck stain rather than paint, which will peel. Pine is a poor choice. Basically a softwood, it requires the most upkeep, and the quality today isn't as high as in grandpa's day.

SLAB FLOORING

On the lower level of our raised ranch, we have a finished living space with cement floors and drop rugs everywhere. We want to upgrade by installing ceramic tile in the hallway and carpeting or parquet elsewhere. Do we need to put down plywood first? What do we do about floor moldings, door casings and baseboard hot-water radiators?

JOHN ARGIRO, *Norwell, Mass.*

If there are no signs of moisture or mildew on the slab, it's probably safe to add new flooring without putting down a layer of plywood. Ceramic tile can be installed directly on the concrete with thin-set mortar. Or you can use carpeting as long as you coat the floor with a concrete sealer. For wood, I suggest you use a floating system. Put down a foam pad, and then add laminated flooring that glues to itself, edge to edge. Because all wood floors move, leave a little expansion space at the baseboards, and cover it with molding. Door casings have to be cut so the flooring can slide just under them, still leaving a little expansion space. Baseboard radiators should have a 1¼-inch or 1½-inch air space between the finished floor and the bottom of the front cover.

UNFINISHED BUSINESS

You've duplicated so much old pine furniture that I'm sure you have also been able to duplicate the old-time finishes. So how about sharing your secrets?

CAL DITCH, *Sun City, Calif.*

In the early years of The New Yankee Workshop, *I used off-the-shelf pine from the local lumberyard and wanted to make it look old, but nothing worked. I tried commercial*

KELLER & HELLER

finishes I tried making my own. Still, I just couldn't get the look I wanted. In recent years, I started using recycled lumber. That is the main secret. Older pine grew more slowly than new pine does—look at the growth rings, and you'll see how close they are—and was seasoned slowly too. I also started using a stain-polyurethane mix, a product I had once vowed never to use because it can't be removed without sanding down to bare wood. But when I tried it on old pine, either straight from the can or in mixes of various shades, I discovered it was easy to apply and gave exactly the look I wanted. Still, it's important to experiment on scrap wood first, to be sure of getting a pleasing finish.

GLORIOUS GREEN

This spring, I'll begin restoring the cornice of my parents' 19th-century Italianate house. I found that the top part of the cornice, as well as a few other embellishments, is made of copper that has been painted many times. I would like to remove the paint, bring the copper back to its natural color and seal it to prevent it from oxidizing and turning green again. Would using ordinary paint remover harm the copper? And what can I use to seal it?

JEFF SOMMER, *Jersey City, N.J.*

My expertise is in wood not metal, but I can at least get you started. To begin with, removing the paint may involve dangerous chemicals, so consult with a restoration contractor. But don't even think about making copper penny-bright. You'd spend the rest of your life trying—and failing—to keep it that way. When the Statue of Liberty underwent a multimillion-dollar restoration a decade ago, her copper skin was left alone. Lady Liberty is still green.

CLEAN-SHOP TALK

We will soon be building our dream house, and we've planned a space for my husband's shop in the basement. Do you have any suggestions?

MARIE ANDREWS, *Mount Pleasant, Penn.*

My preference is for a stand-alone building, but that's not possible for everyone. All openings between the shop and the rest of the house will have to be sealed, and you should consider installing a whole-shop vent or an air-cleaning system. At the very least, try to buy tools that have been designed to hook up to a shop vacuum. But no amount of special equipment will be enough if the workshop isn't cleaned after every use. One final piece of advice: Be sure your husband dusts himself off thoroughly before going upstairs.

BLACKOUT MYSTERY

The lights in our basement burn out too quickly. It seems as if throwing the switch just a few times does it. We're stumped.

R. ZACHARY HELLER, *Apollo, Penn.*

Since they're basement lights, they're subject to shock and vibration, which come from upstairs traffic and can break the filaments of the bulbs. First, you should try switching to heavy-duty lightbulbs. If the problem persists, you should check to see if you have a localized voltage irregularity or antiquated wiring.

WEEKEND PROJECT

I'm partially handicapped and can't do a lot of hammering, but I have a small shop and would like to do simple projects. What about making a board for hanging my tools within easy reach at the rear of my workbench?

JAMES CONNORS, *Medford, Mass.*

You can easily make a tool board with perforated fiberboard and hooks. Arrange your tools on the fiberboard, and outline them with a marking pen. Mount 1 by-3-inch furring strips on the wall, then screw on the fiberboard. That way you'll have clearance for the backs of the hooks.

MAJOR ISSUE

I'm in my junior year at the Savannah College of Art and Design, majoring in historic preservation. One of my pre-graduation goals is to get an internship in the preservation field. Does *This Old House* have any internships?

KATHERINE A. BRIDGETT, *Savannah, Ga.*

Historic preservation is a discipline that moves backward; the aim is to take a house back to what it was at an earlier time. This Old House tends to move forward. While we try as much as we can to maintain the historical character of the houses we work on, we also integrate the kind of modern systems and materials that make the difference between the 1890s and the 1990s. I suggest you try the National Trust for Historic Preservation, 1785 Massachusetts Avenue N.W., Washington, DC 20036.

Send questions to Ask Norm, *This Old House* magazine, 1185 Avenue of the Americas, 27th floor, New York, NY 10036. Include a complete address and daytime phone number. Letters may be edited for clarity and brevity.

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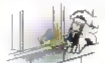
seals where basement wall meets wood plate

seals around pipes and plumbing fixtures

seals gaps between joists and walls

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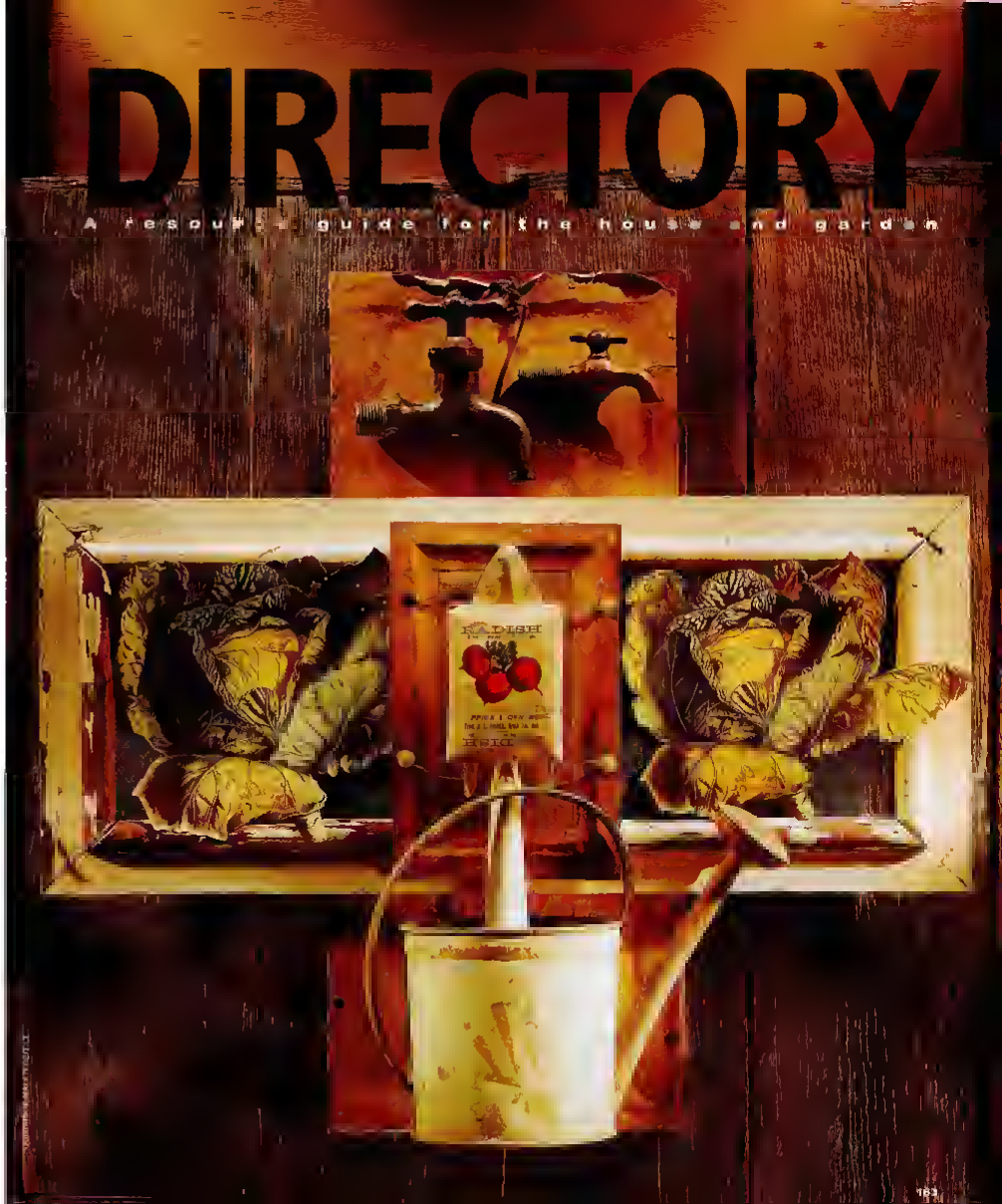
DIRECTORY

A resource guide for the house and garden



This Old House

Where and when to watch on PBS and commercial stations

● indicates *This Old House* "Classics," vintage episodes rebroadcast on commercial stations

ALABAMA

Birmingham
WBIQ TV
Thu. 8:30 pm, Sat. 8 pm
● WCFT/WJSU-TV
Sat. 6:30 am

Demopolis
WBIQ TV
Thu. 8:30 pm, Sat. 8 pm

Dozier
WDIQ-TV
Thu. 8:30 pm, Sat. 8 pm

Florence
WFIQ TV
Thu. 8:30 pm, Sat. 8 pm

Huntsville
WHIQ-TV
Thu. 8:30 pm, Sat. 8 pm
● WZDX TV
Sun. 7 am

Louisville
WGIQ-TV
Thu. 8:30 pm Sat. 8:30 pm

Mobile
WALA TV
WEIQ-TV
Thu. 8:30 pm, Sat. 8 pm

Montgomery
WAIQ-TV
Thu. 8:30 pm Sat. 8 pm

Mount Cheaha
WCIQ-TV
Thu. 8:30 pm Sat. 8 pm

ALASKA

Anchorage
KAKM TV
Sat. 9:30 am

● KIMO-TV
Sat. 4:30 pm

Bethel
KYUK-TV
Fri. 8 pm, Sat. 8 am

Fairbanks
KUAC-TV
Fri. 8 pm, Sat. 8 am
● KATN-TV
Sat. 4:30 pm

Juneau
KTOO-TV
Fri. 8 pm, Sat. 8 am
● KJUD TV
Sat. 4:30 pm

ARIZONA

Phoenix
KAET TV
Thu. 2 pm and 7:30 pm
Sat. 5 pm
● KNXV-TV
Sun. 10 am

Tucson
KUAS-TV
Sat. 6:30 pm
KUAT TV
Sat. 6:30 pm
● KTTU TV
Sat. 9 am

ARKANSAS

Arkadelphia
KETG-TV
Sat. 12:30 pm

Fayetteville
KAFT TV
Sat. 12:30 pm

Jonesboro
KTEJ TV
Sat. 12:30 pm

Little Rock
KETS-TV
Sat. 12:30 pm
● KTHV TV
Sat. 11 am

Mountain View
KEMV-TV
Sat. 12:30 pm

CALIFORNIA

Chico
● KHCR TV
Sun. 5 pm

Eureka
KEET TV
Wed. 7:30 pm
Sat. 10:30 am
● KAEF TV
Sun. 3 pm

Fresno
KVPT TV
Sat. 9:30 am, Sun. 7 pm
Tues. 9 pm

Huntington Beach
KOCE-TV
Sat. 4:30 pm, Tues. 8 pm

Los Angeles
KCET TV
Sat. 5:30 pm
● KABC TV
Sun. 6:30 am

Redding
KIXE-TV
Sat. 10:30 am

Rohnert Park
KRCB-TV
Sun. 7:30 pm Wed. noon

Sacramento
KVIE TV
Thu. 8 pm Sat. 8:30 am
● KPWB-TV
Sat. 6 am

San Bernardino
KVCR TV
Thu. 7 pm

San Diego
KPBS TV
Sat. 11:30 am
● KGTV-TV
Sun. noon

San Francisco
KQED TV
Sat. 3:30 pm
● KPIX TV
Sun. 11:30 am

San Jose
KTEH TV
Wed. 9 pm, Sat. 3 pm
Sun. 4:30 pm

San Mateo
KCSM TV
Tues. 6:30pm, Sun. 10 am

Santa Barbara
● KSBY TV*

COLORADO

Boulder
KBDI TV
Wed. 3:30 am and 3:30 pm
Sat. 3:30 pm, Sun. 4 pm

Colorado Springs
● KRDO TV
Sun. 11:30 am

Denver
KRMA-TV
Sat. 2 pm Sun. 5:30 pm
● KCNC-TV
Sat. 4 pm

Grand Junction
● KJCT TV
Sun. 11:30 am

Pueblo
KTSC-TV
Thu. 8:30 pm

CONNECTICUT

Fairfield
WEDW-TV
Thu. 11:30 pm, Fri. noon
Sat. 7 pm, Sun. 10:30 am

Hartford
WEDH TV
Thu. 11:30 pm, Fri. noon
Sat. 7 pm, Sun. 10:30 am
● WFSB-TV
Sat. 9:30 am

New Haven
WEDY TV
Thu. 11:30 pm, Fri. noon
Sat. 7 pm Sun. 10:30 am

Norwich
WEDN TV
Thu. 11:30 pm, Fri. noon
Sat. 7 pm Sun. 10:30 am

DISTRICT OF COLUMBIA

WETA TV
Sat. 9:30 am

● WRC-TV
Sun. 5 am

FLORIDA

Bonita Springs
WGCU-TV
Sat. 1:30 pm, Sun. 5 pm

Daytona Beach
WCEU TV
Tue. 8 pm and 11 pm
Sat. 3:30 pm

Fort Myers
● WTVK TV
Sat. 5:30 am

Gainesville
WUFT TV
Sat. 5:30 am and 1:30 pm
● WCJB-TV
Sun. 1:30 pm

Jacksonville
WJCT TV
Sat. noon

Miami
WLRN TV
Sun. 10 am
WPBT TV
Sat. 11 am
● WPLG-TV
Sun. 8 am

Orlando
WMFE-TV
Sat. 9 am and 1 pm
Sun. 9 am

Pensacola
WSRE TV
Sat. 12:30 pm and 6:30 pm

*check your local listings

Sarasota
● WWSB-TV
Sun. 11:30 am

Tallahassee
WFSU TV
Sat. 1:30 pm and 6:30 pm

Tampa
WEDU TV
Sat. 11:30 am, Sun. 7:30 pm
WUSF TV
Wed. 9 pm Sun. 5:30 pm
● WTVT TV
Sat. 9:30 am

West Palm Beach
● WPTV-TV
Sun. 6 am

GEORGIA

Albany
● WGVP-TV
Sun. 2:30 pm

Atlanta
WGTV-TV
Thu. 8:30 pm,
Sat. 5:30 pm, Sun. 7 pm
WPBA TV
Mon. 8 pm, Wed. 2 pm
Sat. 6 pm
● WXIA-TV
Sat. 5:30 am

Chatsworth
WCLP TV
Thurs. 8:30 pm
Sat. 5:30 pm, Sun. 7 pm

Cochran
WDCO-TV
Thurs. 8:30 pm
Sat. 3:30 pm, Sun. 7 pm

Columbus
WJSP-TV
Thurs. 8:30 pm
Sat. 5:30 pm, Sun. 7 pm

Dawson
WACS-TV
Thurs. 8:30 pm
Sat. 5:30 pm Sun. 7 pm

Macon
● WMAZ-TV
Sat. 11 am

Pelham
WABW-TV
Thurs. 8:30 pm
Sat. 5:30 pm, Sun. 8 pm

Savannah
WVAN TV
Thurs. 8:30 pm,
Sat. 5:30 pm, Sun. 7 pm
● WTOC-TV
Sun. 3 pm

Waycross
WXGA-TV
Thurs. 8:30 pm
Sat. 3:30 pm, Sun. 7 pm

Wrens
WCES-TV
Thurs. 8:30 pm
Sat. 5:30 pm Sun. 7 pm

HAWAII

Honolulu
KHET TV
Thu. 7:30 pm, Sat. 4:30 pm
● KHNL TV
Sun. 3 pm

Wailuku
KMEB-TV
Thu. 7:30 pm, Sat. 4:30 pm

IDAHO

Boise
KAID-TV
Sun. 4:30 pm
● KIVI-TV
Sun. 6:30 am

Coeur d'Alene
KCDT TV
Sun. 3:30 pm

Moscow
KUID-TV
Sun. 3:30 pm

Pocatello
KISU TV
Sun. 4:30 pm

Twin Falls
KIPT TV
Sun. 4:30 pm

ILLINOIS

Carbondale
WSIU TV
Thu. 7 pm, Fri. 12:30 pm
Sat. 12:30 pm

Champaign
● WAND-TV
Sat. 5:30 am

Charleston
WEIU-TV
Sat. 8:30 pm

Chicago
WTTW TV
Tue. 7:30 pm Sat. 3 pm
● WFLD-TV*

Jacksonville
WSEC-TV
Thu. 10 pm, Sun. 1:30 pm

Macomb
WMEC-TV
Thu. 10 pm Sun. 1:30 pm

Moline
WQPT TV
Tue. 7 pm Sat. 5:30 pm

Olney
WUSI TV
Thu. 7 pm, Fri. 12:30 pm
Sat. 12:30 pm

Peoria
WTVP-TV
Sat. 12:30 pm
● WHOI TV*

Quincy
WQEC-TV
Thu. 10 pm, Sat. 1:30 pm

Rockford
● WTVO-TV
Sat. 6:30 pm

Springfield
● WICS-TV
Sat. 7:30 am

Urbana
WILL TV
Thu. 7:30 pm Sun. 3:30 pm

INDIANA

Bloomington
WTIU-TV
Thu. 11 pm, Sat. 1:30 pm

Evansville
WNIN-TV
Sat. 12:30 pm and 6 pm
Sun. 4:30 pm
● WFIE TV
Sun. 6 am

Fort Wayne
WFWA TV
Sat. 10 am

Indianapolis
WFYI TV
Sat. 10 am Sun. 6 pm
● WTHR TV*

Merrillville
WYIN TV
Thu. 7 pm Sun. 4:30 pm

Muncie
WIPB-TV
Sun. 4:30 pm

South Bend
WNIT TV
Wed. 6 pm Sat. 2 pm

Terre Haute
● WTWO-TV
Sun. 6 am

Vincennes
WVUT-TV
Sat. 1:30 pm

IOWA

Cedar Rapids
● KWWL TV
Sat. 2:30 am

Council Bluffs
KIIN TV
Fri. 6:30 pm, Sat. 1:30 pm

Davenport
KQCT
Tue. 7 pm Sat. 3:30 pm
● WQAD-TV
Sun. 11 am

Des Moines
KDIN TV
Fri. 6:30 pm, Sat. 1:30 pm

Fort Dodge
KTIN TV
Fri. 6:30 pm, Sat. 1:30 pm

Iowa City
KIIN TV
Fri. 6:30 pm, Sat. 1:30 pm

Mason City
KYIN TV
Fri. 6:30 pm, Sat. 1:30 pm

Red Oak
KHIN TV
Fri. 6:30 pm Sat. 1:30 pm

Sioux City
KSIN TV
Fri. 6:30 pm, Sat. 1:30 pm

Waterloo
KRIN TV
Fri. 6:30 pm Sat. 1:30 pm

KANSAS

Bunker Hill
KOOD-TV
Thu. 7 pm, Sat. 12:30 pm

Lakin
KSWK-TV
Thu. 7 pm, Sat. 12:30 pm

Topeka
KTWU TV
Sat. 9:30 am

Wichita
KPTS-TV
Sun. 11:30 am
● KSNW TV
Sun. 6:30 am

*check your local listings

Some kitchens are very expressive. Just like some people.

The GE Profile Performance™ Series was designed with you in mind. It has all the style you can imagine. And all the performance you deserve. For example, it lets you mix classic white (or black) appliances with the latest in stainless steel design. If you're remodeling, send for our new Sterling Solutions brochure. It shows how people across the country are expressing themselves through kitchen renovation. We think you'll find the creative use of stainless steel especially interesting. For a free copy, call the GE Answer Center,® 800.626.2000. Or visit our website www.ge.com/appliances.

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We bring good things to life

TV LISTINGS

This Old House

Where and when to watch on PBS and commercial stations

● Indicates *This Old House* "Classics," vintage episodes rebroadcast on commercial stations

KENTUCKY

Ashland
WKAS-TV
Sun 5 pm

Bowling Green
WKGB-TV
Sun 4 pm
WKYU-TV
Tue 1 pm and 6:30 pm
● WHKO-TV
Sun 6:30 am

Covington
WCVN-TV
Sun 5 pm

Elizabethtown
WKZT-TV
Sun 5 pm

Hazard
WKHA-TV
Sun 5 pm

Lexington
WKLE-TV
Sun 5 pm
● WTVQ-TV*

Louisville
WKMJ-TV
Sun 5 pm
WKPC-TV
Sun 5 pm
● WAVE-TV*

Madisonville
WKMA-TV
Sun 4 pm

Morehead
WKMR-TV
Sun 5 pm

Murray
WKMU-TV
Sun 4 pm

Owensboro
WKOH-TV
Sun 4 pm

Owenton
WKON-TV
Sun 5 pm

Paducah
WKPD-TV
Sun 4 pm
● KBSI-TV
Sun 10:30 pm

Pikeville
WKPI-TV
Sun 5 pm

Somerset
WKSO-TV
Sun 5 pm

LOUISIANA

Alexandria
KLPA-TV
Sun 10 am

Baton Rouge
WLPB-TV
Sun 10 am
● KWBJ-TV
Sun noon

Lafayette
KLPB-TV
Sun 10 am

Lake Charles
KLTL-TV
Sun 10 am

Monroe
KLTM-TV
Sun 10 am

New Orleans
WYES-TV
Sat 8:30 am
● WVUE
Sun 6 pm

Shreveport
KLTS-TV
Sun 10 am
● KTBS*

MAINE

Bangor
WMEB-TV
Sat 1:30 pm

Calais
WMED-TV
Sat 1:30 pm

Lewiston
WCBB-TV
Sat 1:30 pm

Portland
WMEA-TV
Sat 1:30 pm
● WPXT-TV
Sun 11 am

Presque Isle
WMEM-TV
Sat 1:30 pm

MARYLAND

Annapolis
WMPT-TV
Sat 4 pm Sun 6:30 pm

Baltimore
WMPB-TV
Sat 4 pm, Sun 6:30 pm
● WMAR-TV*

Frederick
WFPT-TV
Sat 4 pm, Sun 6:30 pm

Hagerstown
WWPB-TV
Sat 4 pm, Sun 6:30 pm

Oakland
WGPT-TV
Sat 4 pm, Sun 6:30 pm

Salisbury
WCPB-TV
Sat 4 pm, Sun 6:30 pm

MASSACHUSETTS

Boston
WGBH-TV
Thu 8 pm, Sat 5:30 pm
WGBX-TV
Sun 9 am
● WFXT-TV
Sun 11 am

Springfield
WGBY-TV
Thu 8 pm, Sat 5:30 pm

MICHIGAN

Alpena
WCML-TV
Sat 2:30 pm

Bad Axe
WUCX-TV
Tue 12:30 pm, Sun 5 pm

Cadillac
WCMV
Sat 2:30 pm
● WWTV/WWUP
Sun 10:30 am

Detroit
WTVS-TV
Thu 8:30 pm
● WDIV-TV*

East Lansing
WKAR-TV
Sat 1:30 pm, Sun 5 pm

Flint
WFUM-TV
Thu 9:30 pm, Sat 1:30 pm
● WEYI-TV
Sun 10:30 am

Grand Rapids
WGVU-TV
Thu 8:30 pm, Sat 10 am
● WOOD/WOTV-TV*

Kalamazoo
WGVK-TV
Thu 8:30 pm Sat 10 am

Lansing
● WILX-TV
Sun 11 am

Manistee
WCMW-TV
Sat 2:30 pm

Marquette
WNMU-TV
Sat 1:30 pm

Mt. Pleasant
WCMU-TV
Sat 2:30 pm

University Center
WUCM-TV
Tue 12:30 pm, Sun 5 pm

MINNESOTA

Appleton
KSMN
Sat 12:30 pm, Thu 8 pm
KWCM-TV
Sat 12:30 pm, Thu 8 pm

Austin
KSMQ-TV
Thu 7 pm, Sat 12:30 pm

Bemidji
KAWE-TV
Thu 7:30 pm
Sat 12:30 pm

Brainerd
KAWB-TV
Thu 7:30 pm
Sat 12:30 pm

Duluth
WDSE-TV
Sat 6:30 pm, Sun 9:30 am

Rochester
● KAAL-TV
Sat 6 am

St. Paul/Minneapolis
KTCA-TV
Wed 7:30 pm, Sat 6:30 pm
● KSTP-TV
Sun 11:30 am

MISSISSIPPI

Biloxi
WMAH-TV
Sat 6:30 pm

Booneville
WMAE-TV
Sat 6:30 pm

Buda
WMAU-TV
Sat 6:30 pm

Greenwood
WMAO-TV
Sat 6:30 pm

Jackson
WMPN-TV
Sat 6:30 pm

Meridian
WMAW-TV
Sat 6:30 pm

Mississippi State
WMAB-TV
Sat 6:30 pm

Oxford
WMAV-TV
Sat 6:30 pm

MISSOURI

Columbia
● KRCG-TV
Sun 11 am

Joplin
● KOAM-TV
Sun 6 am
KOZJ-TV
Sat 12:30 pm

Kansas City
KCPT-TV
Thu 7 pm Sat 12:30 pm
● KMBC-TV
Sat 6:30 am

St. Louis
KETC-TV
Wed 12:30 pm
Sat 6:30 pm
● KTVI-TV*

Sedalia
KMOS-TV
Sat 12:30 pm

Springfield
KOZK-TV
Sat 12:30 pm
● KSPR-TV
Sun 11 am

MONTANA

Bozeman
KUSM-TV
Wed 11:26 pm
Sat 11:30 am

Missoula
KUFM-TV
Wed 11:26 pm
Sat 11:30 am

NEBRASKA

Alliance
NETV-TV
Sat 10 am and 5:30 pm

Bassett
NETV-TV
Sat 10 am and 5:30 pm

Hastings
NETV-TV
Sat 10 am and 5:30 pm

Lexington
KLNE-TV
Sat 10 am and 5:30 pm

Lincoln
KUON-TV
Sat 10 am and 5:30 pm
● KHAS-TV
Sat 5 pm

Merriman
NETV-TV
Sat 10 am and 5:30 pm

Norfolk
NETV-TV
Sat 10 am and 5:30 pm

North Platte
NETV-TV
Sat 10 am and 5:30 pm

Omaha
NETV-TV
Sat 10 am and 5:30 pm

NEVADA

Las Vegas
KLVX-TV
Sat 9 am and 12:30 pm
Sun 7 pm
● KTNV-TV
Sun 8:30 am

Reno
KNPB-TV
Sat 10:30 am
● KAME-TV
Sat 11 am

NEW HAMPSHIRE

Durham
WENH-TV
Thu 8:30 pm Sun 10 am

Keene
WEKW-TV
Thu 8:30 pm, Sun. 10 am

Littleton
WLED-TV
Thu 8:30 pm Sun. 10 am

Manchester
● WNUR-TV
Sun 8 am

NEW JERSEY

Camden
WNJS-TV
Thu 8 pm Sat. 8 pm
Sun. 5:30 pm

Montclair
WNJN-TV
Thu. 8 pm, Sat. 8 pm
Sun 5:30 pm

New Brunswick
WNJB-TV
Thu 8 pm, Sat 8 pm
Sun. 5:30 pm

Trenton
WNJT-TV
Thu 8 pm Sat 8 pm
Sun 5:30 pm

NEW MEXICO

Albuquerque
KNME-TV
Thu. 7 pm, Sun 10 am

Las Cruces
KRWG-TV
Sat. 11:30 am

Portales
KENW-TV
Wed 10:30 pm Sat 4 pm

NEW YORK

Albany
● WKKA-TV
Sun. 10 am

Binghamton
WSKG-TV
Sat 8 am, 1:30 pm
and 6:30 pm, Sun. 7 pm
● WENG-TV
Sat. 7:30 am

Buffalo
WNED-TV
Sat 10:30 am
WNEQ-TV
Sun 7 pm
● WIVB-TV
Sun. 8:30 am

Elmira
● WYDC-TV*

Long Island
WLIW-TV
Sat 10:30 am, Sun. 9 pm

New York
WNET-TV
Sat 5:30 pm
● WCBS-TV
Sun. 7:30 am

Norwood
WNPI-TV
Sat 10:30 am

Plattsburgh
WCFE-TV
Sun. 11:30 am

Rochester
WXXI-TV
Sat. 10:57 am, Sun. 5:30 pm
● WHEC-TV
Sun 6 am

Schenectady
WMHT-TV
Sat 10:30 am
WMHQ-TV
Sun 9:30

Syracuse
WCNY-TV
Sat 10:30 am
● WSTM-TV
Sun. 6 am

Watertown
WNPE-TV
Sat 10:30 am

NORTH CAROLINA

Asheville
WUNF-TV
Sat 5:30 pm, Sun. 9 am

Chapel Hill
WUNC-TV
Sat 5:30 pm, Sun 9 am

Charlotte
WTVI-TV
Thu. 8 pm, Sat. 5 pm
Sun. 11 am
WUNG-TV
Sat. 3:30 pm, Sun. 9 am
● WBTV-TV
Sat 2:30 pm, Sun 1:30 pm

Columbia
WUND-TV
Sat. 5:30 pm, Thurs. 8 pm

Greensboro
● WGHP-TV
Sat. 6:30 am

Greenville
WUNK-TV
Sat 5:30 pm, Sun 9 am
● WLOS/WFBC-TV
Sat 10 am

Jacksonville
WUNM-TV
Sat. 5:30 pm Sun. 9 am

Linville
WUNE-TV
Sat 5:30 pm, Sun. 9 am

Lumberton
WUNU-TV
Sat 5:30 pm Sun. 9 am

Raleigh
● WTVD-TV
Sun. 11:30 am

Roanoke Rapids
WUNP-TV
Sat. 5:30 pm Sun 9 am

Wilmington
WUNJ-TV
Sat. 5:30 pm, Sun. 9 am

Winston-Salem
WUNL-TV
Sat 5:30 pm Sun. 9 am

NORTH DAKOTA

Bismarck
KBME-TV
Thu. 7 pm, Sat. 6 pm

Dickinson
KDSE-TV
Thu. 7 pm, Sat. 6 pm

Ellendale
KJRE-TV
Thu. 7 pm, Sat. 6 pm

Fargo
KFME-TV
Thu 7 pm, Sat 6 pm

Grand Forks
KGFE-TV
Thu 7 pm Sat. 6 pm

*check your local listings

This Old House is a production of WGBH Boston

For thousands of moms, dads and grateful baby sitters, moments like these come a little more often and last a little bit longer with Hurd Windows and Patio Doors. Why? Five energy efficient glass options stop heat, cold, outside noise and UV fading without tints, blinds or shades. And with our FineTuning™ concept, you can select different kinds of glass for different sides of your house, so every room is as

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Home on the Ranch

A small 1950s house rises to a new level

On the front steps, Norm and Steve relax with Briar and Jan Igoe before undertaking a project that will change nearly every square foot of their Lexington, Mass. house

Week 7 (May 2-3)

Tom and Norm construct walls for the great room. Architect Rick Bechtel discusses the portico redesign and the replacement of the brick steps with concrete. John Silva and home owner Brian Igoe reconfigure the floor. Tom and Norm discuss building-code regulations. ***Watch and learn*** Repelling termites from the framing

Week 8 (May 9-10)

After a special framing crew begins construction at the top floor and roof, Jan Igoe takes Steve on a tour of the empty space that will become the new fireplace, master bedroom and bath and guest room. Outside, Richard prevents future oil leakage by removing an aging underground storage tank. On a field trip, Steve and architect Rick Bechtel ride bicycles to a nearby new housing development designed to look old. Upon his return to the Igoe house, Steve checks on the progress in the mudroom-to-be where Norm is building a coat closet. ***Watch and learn*** Driving screws into a concrete floor

Week 9 (May 16-17)

As workers install trimwork on the house's frame, the Igoes stroll about the great-room-in progress, which will have French doors and two sets of bay windows, one with a built-in seat. Outside, landscape architect Tom Wirth discusses regrading the property. On the top floor, Tom Silva insulates with special strips and chutes. Meanwhile, Norm visits timber framer guru Tedd Benson in Alstead, New Hampshire, where they take a boat ride and tour another project of Benson's—a 10,000 square-foot rustic house supported in part by a 40-foot tall tree. Next, they head to Benson's workshop, and Norm gets ready for a lesson in beams. ***Watch and learn*** Making a truss

Week 10 (May 23-24)

Tedd Benson and the beam team descend upon the Lexington project and begin to put up trusses. Norm helped make. Landscape architect Tom Wirth reveals drawings of his plans for reconfiguring the driveway, steps and walkway. Downstairs in the basement, Richard talks to Steve about the combination of metal and PVC piping needed to accommodate the new master bathroom. Back outside, Norm introduces Steve to innovative composition shingle sheets, then installs them on the roof. ***Watch and learn*** Using stress skin panels

Week 11 (May 30-31)

With the shingles in place, Tom and Norm turn their attention to new windows. After applying house wrap between the casings and sides of the window opening, they ready the windows for installation using caulking and a biscuit joint to attach the jambs. Steve checks out the new fireplace in the library, then visits mason Lenny Belliveau, who introduces him to the anatomy of the fire-resistant-brick fireplace. Also, a visit from roofing and sheet metal contractor Ted Dumas, a sweeping view of the great room, and a look at the house's wiring...old and new. ***Watch and learn*** Installing copper valleys

Architect Graham Gund, center, with the Igoes. "He took a house whose aesthetics had passed—and radically redesigned it," says Steve Thomas

Minot
KSRE-TV
Thu. 7 pm, Sat. 6 pm

Wilkeson
KWSE-TV
Thu. 7 pm, Sat. 6 pm

OHIO

Akron
WEAO TV
Sat. 10:30 am and 5 pm
Sun. 4 pm

Athens
WOUB-TV
Sat. 5 pm

Bowling Green
WBGU-TV
Sat. 1:30 pm Mon. 3 pm

Cambridge
WOUC-TV
Sat. 5 pm

Cincinnati
WCET TV
Thu. 8 pm
Sat. 9 am and 6 pm
● WCPO-TV
Sat. 8 am

Cleveland
WVIZ-TV
Tue. 7:30 pm, Sat. 1 pm
Sun. 12:30 pm
● WEWS-TV
Sun. 8 am

Columbus
WOSU TV
Thu. 8 pm, Sat. 4:30 pm
● WSYX TV
Sun. 9:30 am

Dayton
WPTD TV
Thu. 8 pm, Sat. 9:30 am
● WRGT TV
Sun. 10 am

Oxford
WITC-TV
Mon. 7:30 pm
Sun. 12:30 pm

Portsmouth
WPBO TV
Thu. 8 pm, Sat. 4:30 pm

Toledo
WGTE-TV
Thu. 8 pm, Sat. 1 pm
Sun. 1 pm
● WTVG-TV*

Wheeling
● WTRF-TV*

Youngstown
WNEO TV
Sat. 10:30 am and 5 pm
Sun. 4 pm
● WFMJ TV
Sun. 10 am

OKLAHOMA

Cheyenne
KWET TV
Sat. 9:30 am and 12:30 pm
Sun. 3 pm

Eufaula
KOET TV
Sat. 9:30 am and 12:30 pm
Sun. 3 pm

Oklahoma City
KETA-TV
Sat. 9:30 am and 12:30 pm
Sun. 3 pm
● KOCO-TV
Sat. noon

Tulsa
KOED TV
Sat. 9:30 am and 12:30 pm
Sun. 3 pm
● KJRH-TV
Sun. 12:30 pm

OREGON

Bend
KOAB-TV
Thu. 8 pm, Sat. 5:30 pm

Corvallis
KOAC-TV
Thu. 8 pm, Sat. 5:30 pm

Eugene
KEPB-TV
Thu. 8 pm, Sat. 5:30 pm
● KEZI TV
Sun. 12:30 pm

Klamath Falls
KFTS-TV
Sat. 10:30 am, Thu. 8 pm

La Grande
KTVR TV
Thu. 8 pm, Sat. 5:30 pm

Medford
KSYS-TV
Sat. 10:30 am, Thu. 8 pm
● KOBI/KOTI-TV
Sun. 4 pm

Portland
KOPB-TV
Thu. 8 pm, Sat. 5:30 pm
● KATU-TV
Sun. 5:30 am

PENNSYLVANIA

Allentown
WLVT TV
Fri. 7:30 pm, Sat. 12:30 pm

Erie
WQLN TV
Sat. 6:30 pm
● WJET
Sat. 6:30 am

Harrisburg
WITF TV
Thu. 8 pm
Sat. 9 am and 6 pm
● WGAL-TV
Sun. 11 am

Johnstown
● WWCP/WATM TV
Sun. 9 am

Philadelphia
WHYY TV
Sat. 11 am and 5:30 pm
Sun. 7 pm
● WTXF TV*

Pittsburgh
WQED-TV
Sat. 5 pm
WQEX TV
Sat. 5 pm

Pittston
WVIA TV
Thu. 8 pm
Sat. 5 pm and 5:30 pm

University Park
WPSX TV
Sat. 9 am, Sun. 4:30 pm

Wilkes-Barre
● WYOU-TV*

RHODE ISLAND

Providence
WSBE-TV
Tue. 8:30 pm, Sun. 6 pm
● WLNE TV
Sat. 6:30 am

SOUTH CAROLINA

Allendale
● WEBA-TV
Sat. 4 pm

Beaufort
● WJWJ TV
Sat. 4 pm

Charleston
● WCSC-TV
Sun. 5:30 am
● WITV TV
Sat. 4 pm

Columbia
● WLTX TV
Sun. 6 am
● WKLK TV
Sat. 4 pm

Conway
● WHMC-TV
Sat. 4 pm

Florence
● WPDE-TV
Sat. 4 pm

Greenville
● WNTV-TV
Sat. 4 pm

Greenwood
● WNEH-TV
Sat. 4 pm

Rock Hill
● WNSC-TV
Sat. 4 pm

Spartanburg
● WRET TV
Sat. 4 pm

Sumter
● WRJA TV
Sat. 4 pm

SOUTH DAKOTA

Aberdeen
KDSD-TV
Sat. 4 pm

Brookings
KESD TV
Sat. 4 pm

Eagle Butte
KFSD TV
Sat. 3 pm

Lowry
KQSD-TV
Sat. 4 pm

Martin
KZSD-TV
Sat. 3 pm

Pierre
KTSD-TV
Sat. 4 pm

Rapid City
KBHE-TV
Sat. 3 pm
● KCLO TV
Sun. 10 am

Sioux Falls
KCSD-TV
Sat. 4 pm
● KELO TV
Sun. 10 am

Vermillion
KUSD-TV
Sat. 4:30 pm

TENNESSEE

Chattanooga
WTCI TV
Sat. 1:30 pm

*check your local listings

PHOTOGRAPHS BY © B. MEYER; TREVOR RICHARDS

This Old House is a production of WGBH Boston

Georgians. Colonials. Victorians. They're architectural jewels of an era long since past. Jewels that embody your passion for grace, elegance and style.

Restoring them is your labor of love. But as beautiful as these classic homes may be, their rubble stone basements, uninsulated walls and typical nooks & crannies mean high energy costs and annoying discomfort. Until now, the only solution was stripping plaster to the studs.

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With Icynene, we can help you preserve those architectural elements you truly love, while substantially improving your home's comfort and energy efficiency. And because Icynene expands to fill every nook & cranny and adheres to everything it touches, you can eliminate costly secondary building materials, like vapor barrier and caulking.

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A Guide to Resources for the "Classics" TV Series

An updated list of suppliers and manufacturers featured in *This Old House*'s Lexington, Massachusetts, project in 1982

A ranch no more. To help keep the project on schedule, Brian Igoe pitched in on the construction work before heading off to his real job at 6 a.m.

Week 7

Engineered and dimensional lumber: Georgia Pacific Corp. **Plywood:** APA-Engineered Wood Association, 253-565-6600. **Building standards program:** Code Plus. APA-Engineered Wood Association, 800-338-9972. **Architect:** Rick Bechtel.

Week 8

Concrete fasteners: Tapcon screws, ITW Buildex, 800-323-0720. **Pump jacks and scaffolding:** Lynn Ladder & Scaffolding Co., 220 S. Common St., Lynn, MA 01905, 781-598-6010. **Underground oil tank removal:** Massachusetts Oil Heat Council, 118 Cedar Street, Wellesley Hills, MA 02181, 781-237-0703. Arlex Oil Corp., 275 Massachusetts Ave., Lexington, MA 02173, 781-862-3400.

Week 9

Landscape architect: Thomas Wirth Associates, Sherborn, MA 01770, 508-651-3643. **Roof ventilation chutes:** ADO Products, 21600 129th Ave. N., Rogers, MN 55374, 800-966-6181. **Engineered wood trim:** PrimeTrim, Georgia Pacific Corp., 800-284-5347. **Soffit and ridge vents:** The Solar Group, Box 525, Taylorsville, MS 39168, 800-647-7063.

Week 10

Timber trusses: Benson Woodworking Co., Alstead Center, NH, 603-835-6391. **Stress-skin panels:** Winter Panel Corp., 802-254-3435. **Stress-skin panel installation crew:** Panel Pros Inc., Box 1539, Keene, NH 03431. **Landscape architect:** Thomas Wirth Associates (see week 9). **PVC pipe:** Charlotte Pipe and Foundry Co., 800-438-6091. **Shingles, felt underlayment and waterproof shingle underlayment:** Grand Manor Shingle and WinterGuard, Certain Teed Corp., 800-274-8530.

Week 11

Windows: Architect Series, Pella Corp., 515-628-1000. **House wrap:** Tyvek, Dupont Tyvek Construction Products, 800-441-1250. **Window trim:** PrimeTrim, Georgia Pacific. **Copper valleys:** Harvey Industries, 800-882-8353. **Copper work:** Todd A. Dumas & Co., 401-722-1264. **Bricks and mortar:** Wilmington Grain & Building Materials, 978-658-4741. **Mason:** Lenny's Masonry Contracting, 508-897-6256. **Ridge Vent:** Shingle-Over Roof Vent, The Solar Group. **Electrician:** Paul J. Kennedy Jr., 800-624-2120.

Once installed in the newly expanded house, Jan Igoe "realized how much the original ranch had cramped her psychological outlook."

Cookeville
WCTE-TV
Sat. 12:30 pm

Knoxville
WKOP-TV
Sat. 1:30 pm
WBIR-TV
Sat. 1:30 pm
● WATE-TV
Sun. 5:30 am

Lexington/Marion
WLJT-TV
Thu. 9:30 pm
Sat. 12:30 pm

Memphis
WKNO-TV
Thu. 7 pm, Sat. 9:30 am, Sun. 5:30 pm
● WFTV/WLMT-TV
Sun. 11:30 am

Nashville
WDCN-TV
Sat. 4:30 pm
● WKAM-TV
Sun. 12:30 pm

Tri-Cities
● WKPT/WAYK-TV
Sat. 10:30 am

TEXAS

Amarillo
KACV-TV
Sat. 12:30 pm
● KFDA-TV
Sat. 5 pm

Austin
KLRU-TV
Sat. 5:30 pm
● KTBC-TV
Sat. 7 am

Beaumont
● KBMT-TV
Sun. 6:30 am

College Station
KAMU-TV
Sat. 12:30 pm, Mon. 10 pm
Wed. 2 pm

Corpus Christi
KEDT-TV
Sat. 12:30 pm, 9:30 pm
● KRIS/KDF-TV*

Dallas/Fort Worth
KERA-TV
Sat. 6:30 pm
● KXAS/KXTX-TV
Sat. 3 pm

El Paso
KCOS-TV
Sat. 5 pm

Harlingen
KMBH-TV
Sat. 12:30 pm
● KVEO-TV
Sun. 6 am

Houston
KUHT-TV
Sun. 11:30 am
● KTRK-TV
Sun. 11 am

Killeen
KNCT-TV
Sat. 12:30 pm, Sun. 9:30 am

Lubbock
KTXT-TV
Thu. 12 noon
Sat. 12:30 pm
● KLBK-TV
Sun. 5 pm

Odessa
KOCV-TV
Sun. 12:30 pm

San Antonio
KLRN-TV
Thu. 8 pm
Sat. 5 and 5:30 pm

Tyler
● KLPN-TV
Sat. 9 am

Waco
KCTF-TV
Mon. 12:30 pm
Sat. 6:30 pm
● KCOS-TV
Sun. 11 am

UTAH

Provo
KBYU-TV
Sat. 9:30 am and noon

Salt Lake City
KUED-TV
Sat. 5 pm
● KTVX-TV*

VERMONT

Burlington
WETK-TV
Fri. 4 am, Sat. 11 am
● WCAX-TV
Sun. 8:30 am

Rutland
WVER-TV
Fri. 4 am, Sat. 11 am

St. Johnsbury
WVTB-TV
Fri. 4 am, Sat. 11 am

Windsor
WVTA-TV
Fri. 4 am, Sat. 11 am

VIRGINIA

Charlottesville
WHTJ-TV
Sat. 8:30 am

Falls Church
WNVT-TV
Sun. 3 pm

Harrisonburg
WVPT-TV
Sat. 1:30 pm
WVPT-TV
Sat. 4 pm

Marion
WMSY-TV
Sat. 1:30 pm

Norfolk
WHRO-TV
Thu. 2 pm, Sat. 8:30 am

Norton
WSBN-TV
Sat. 1:30 pm

Richmond
WCVE-TV
Sat. 8:30 am
WCVW-TV
Fri. 8:30 pm
● WAWV-TV
Sun. 6 am

Roanoke
WBRA-TV
Sat. 1:30 pm
● WSLS-TV
Sun. 6:30 am

WASHINGTON

Centralia
KCKA-TV
Thu. 7 pm
Sat. 12:30 pm and 5:30 pm

Pullman
KWSU-TV
Mon. 7:30 pm
Wed. 7:30 am, Sat. 2 pm

Richland
KTNW-TV
Thu. 7 pm
Sat. 2 pm, Sun. 4:30 pm

Seattle
KCTS-TV
Sun. 5 pm
● KIKO-TV*

Spokane
KSPS-TV
Sat. 9:30 am, Sun. 5:30 pm
● KXLY-TV
Sun. 9:30 am

Tacoma
KBTC-TV
Thu. 7 pm
Sat. 12:30 pm and 5:30 pm

Yakima
KYVE-TV
Sun. 3 pm

WEST VIRGINIA

Beckley
WSWP-TV
Sat. 1:30 pm

Bluefield
● WOAY-TV*

Charleston
● WCHS-TV
Sun. 6 am

Huntington
WPBY-TV
Sat. 1:30 pm

Morgantown
WNPB-TV
Sat. 1:30 pm

Wheeling
● WTRF-TV*

WISCONSIN

Green Bay
WPNE-TV
Wed. 7:30 pm, Sun. 4 pm
● WGBA-TV
Sun. 7 am

La Crosse
WHLA-TV
Wed. 7:30 pm, Sun. 4 pm
● WEAU-TV
Sun. 5 am

Madison
WHA-TV
Wed. 7:30 pm, Sun. 4 pm
● WMTV-TV
Sat. 5 pm

Menomonie
WHWC-TV
Wed. 7:30 pm, Sun. 4 pm

Milwaukee
WMVS-TV
Thu. 7:30 pm, Sat. 5:30 am
● WTMJ-TV
Sun. 6 am

Park Falls
WLEF-TV
Wed. 7:30 pm, Sun. 4 pm

Wausau
WHRM-TV
Wed. 7:30 pm, Sun. 4 pm
● WJFW-TV
Sun. 10:30 am

WYOMING

Riverton
KCWC-TV
Sat. noon and 5 pm

*check your local listings

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DIRECTORY

EXTRAS
pp. 24-31

p. 24—**You Walkie, I Talkie:** Family Radio Service two-way radio TP 300, $129 each, including four AA batteries and recharger for rechargeable batteries, Oregon Scientific Inc., 18383 S.W. Boones Ferry Rd., Portland, OR 97224, 800-853-8883. *Reported by Craig Kellogg.*

The Lived-In Look: *The Horse Whisperer* (Touchstone Pictures) opens nationwide on May 15. The book of the same name is by Nicholas Evans, Delacorte Press, NY, 1995, 451 pp., $23.95 hardcover. *Reported by Laura Fisher Kaiser.*

p. 25—**Hose Tamers:**
Snake basket: Terra-cotta pot, G331686, 17-in. diameter, 12 in. tall, $89, Smith & Hawken, 2 Arbor La., Box 6900, Florence, KY 41022-6900, 800-776-3336, www.smith-hawken.com.
Saddle: Stand and faucet, XB805, $27.95, 6-ft. leader hose, $5.95, Lee Valley Tools Ltd., Box 1780, Ogdensburg, NY 13669-0490, 800-871-8158; www.leevalley.com.
Hosemobile: Deluxe cart 9906L, $77.75, from Ames Lawn and Garden Tools (Box 1774, Parkersburg, WV 26102, 800-725-9500).
Swiveler: Retracta professional reel with 50-ft. hose, $264.95, Griot's Garage, 3500 A 20th St. E., Tacoma, WA 98424, 800-345-5789, www.griotsgarage.com.
Pushcart: Portable reel PR 1400-4-200, $247, Coxreels, Coxwells Inc., 6720 S. Clementine Ct., Tempe, AZ 85283, 800-269-7335, www.thomasregister.com.
Hoses. Green. Flexogen 10 34050, ¾ in. diameter, 50 ft. long, $43.50, Gilmour Group (Vermont American Corp.), Box 838, Somerset, PA 15501, 800-458-0107.
Orange: Lightweight, 1.5-in. diameter, 50 ft., $22.50, Gardener's Supply Co., 128 Intervale Rd., Burlington, VT 05401, 800-863-1700, www.gardeners.com.
Our thanks to: Howard W. Law, Sporty's Shops, Batavia, OH, 800-543-8633. *Reported by Thomas Dodson.*

p. 28—**Hammer Zen:** Homing hammer, 18-oz. head, waffle-faced, $33.49, plain, $32.99, Takagi Tools Inc., 337-A Figueroa St., Wilmington, CA 90744, 800-777-5538. *Reported by William Marsano.*
Folk Remedies: *A Shelter Sketchbook. Timeless Building Solutions* by John S. Taylor, 157 pp., 1997, $18.95, Chelsea Green Publishing Co., Box 428, White River Junction, VT 05001, 800-639-4099. *Reported by Jeanne Huber.*

p. 29—**Dust Never Sleeps.** Pop-up dust barriers, $139 per pair, sheeting not included, Zipwall, 122 Jason St., Arlington, MA 02174, 800-718-2255. *Reported by John Banta.*
Quore: *On a Street Called Easy, in a Cottage Called Joye* by Gregory White Smith and Steven Naifeh, 1997, 321 pp., $14, Broadway Books (Bantam Doubleday Dell Publishing Group) New York, 800-323-9872.
Books: *Frank Lloyd Wright* by Robert McCarter, 1997, Phaidon Press Ltd., London, 368 pp., $79.95, distributed by Chronicle Books, 800-722-6657.
Our thanks to: Kenneth Frampton, Ware Professor of Architecture, Columbia University, New York City; Bruce Brooks Pfeiffer, director of archives, Frank Lloyd Wright Foundation, Scottsdale, AZ. *Do It Yourself: Home Improvement in 20th Century America* by Carolyn M. Goldstein, 1998, Princeton Architectural Press, New York City, 112 pp., $17.95, distributed by Chronicle Books, 800-722-6657.
For more information: "Do It Yourself" symposium, June 25, 6-7:30 p.m. Author Carolyn Goldstein, *This Old House* producer Bruce Irving and others discuss the home-improvement movement. National Building Museum, 401 F St., N.W., Washington, DC 20001. Reservations required, general admission for nonmembers is $12; 202-272-2448, ext. 3904. *Reported by Rebecca Reisner.*
Shed No Tears: "Garden Shed" by Pamela Hartford, *This Old House* magazine, September/October 1995, p. 88. For copies of the article, contact *This Old House* assistant editor Meghan Anderson at 212-522-2806, manderson@toh.timeinc.com. *Reported by R.R.*

p. 30—**House of a Different Color:** John E. Booth Co., 38 Stonybrook Rd., Marblehead, MA 01945. Jeremiah Lee Mansion museum, 161 Washington St., Box 1048, Marblehead, MA 01945, 781-631-1069. Open mid-May to October, Monday-Saturday 10 a.m.-4 p.m., Sunday 1-4 p.m., admission $4 for adults and children 10 years old and over, $3.50 for students. *Reported by Elena Kornbluth.*
Third Hand
1. Multi-Tool A100, $99.95, Kershaw Knives, 25300 S.W. Pkwy. Ave., Wilsonville, OR 97070; 800-325-2891.
2. Victorinox Swiss Tool, $79, Swiss Army Brands Inc., Box 874, Shelton, CT 06484, 203-929-6391; in-state or

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800 243 4045 nationwide, www.swissarmy.com

3. Swiss Grip, 16968, with ¼-in. socket adapter, $100, Precise International, 15 Corporate Dr., Orangeburg, NY 10962, 800-447-7422

4. Buckline Tool, 355, $61, Buck Knives, Box 1267, El Cajon, CA 92022, 619 449 1100, www.buckknives.com

5. Tough Tool, $79.95, Imperial Schrade Corp., Box 7000, Ellenville, NY 12428, 800 272-4723

6. Multi-Lite, 07200, $64, Fiskars Inc., Gerber Legendary Blades, Box 23088, Portland, OR 97281, 800 950 6161

Reported by WM

p. 31—Between a Rock and a Crawl Space

Camera. Xtreem GX 1, 12704023, $140, strap, $20, Minolta Corp., 101 Williams Dr., Ramsey, NJ 07446, 201 825-4000, www.minoltausa.com.

Back- and mini-packs: Fanny Pak, $24.97, Tool Pak, $89.97, Pakrek Inc., 7307 82nd St. Ct., S.W., Tacoma, WA 98498, 800 258-8458; www.toolpak.com.

Flashlight. Saxo E 35, $21, PMI Petzl Distribution Inc., Box 803, Lafayette, GA 30728, 800 282-7673, www.petzl.com

Reported by Sarah Shey

LAWN ORDER
pp. 38-42

Power on a Stick. Echo SRM 3100 straight shaft, 4 layer cable-drive string trimmer with 30 5-cc two-cycle gas engine, centrifugal clutch, semiautomatic head with .105-in. edged line, dry weight 13.9 lbs., Echo Inc., 400 Oakwood Road, Lake Zurich, Illinois 60047; 800-432-3246

Home Boy: Toro 51450 electric string trimmer with curved cable-driveshaft, 4.7 amps, 120 v, semiautomatic head with .065-in. round line, 8 lbs., Toro Lawn & Garden Equipment, 7387 W. State Route 19, Fostoria, Ohio 44830-9518, 419-435-3400.

Clear Cutter: Husqvarna 265RX brush cutter with 65-cc two cycle gas engine, bicycle handle, straight solid-steel shaft, electronic ignition, centrifugal clutch, dry weight 18 lbs., Husqvarna Forest and Garden Co., 9006 Perimeter Woods Drive, Charlotte, North Carolina 28216, 800-438-7297.

Switch-Hitter: Homelite Expand-It split-shaft string trimmer with 25 cc two-cycle gas engine, fixed-line head, loop-front handle, curved cable shaft, .080-in. round line, dry weight 10¼ lbs., Homelite Incorporated, 14401 Carowinds Boulevard, Box 7047, Charlotte, North Carolina 28241; 800 242-4672.

Clean Cruiser: Ryobi 990r split-shaft string trimmer and brush cutter with 26.2-cc four cycle gas engine, electronic ignition, semiautomatic head, J-type front handle, straight steel shaft, centrifugal clutch, .080-in. round line, Ryobi America Corp., 5201 Pearman Dairy Road, Anderson, South Carolina 29625, 800 525 2579

Trimmers used by Roger Cook: Shindaiwa T230 string trimmer, Husqvarna 240r brush trimmer

The Great Trimmer Transformation.

1. Leaf kicker, BV720r Blower Vac, Ryobi America Corp., 5201 Pearman Dairy Road, Anderson, South Carolina 29625, 800-525-2579.

2. Lumber limber: chain-saw pruner; Echo Inc., 400 Oakwood Road, Lake Zurich, Illinois 60047, 800-432-3246.

3. Dirt Tiller: cultivator attachment ca-100, Homelite Inc., 14401 Carowinds Boulevard, Box 7047, Charlotte, North Carolina 28241, 800-242-4672.

4. Grass edger: edger attachment ea-100, Homelite.

5. Hedge pruner: 999442 00480, hedge clipper 999442 00530, Echo.

6. Snow Thrower: Lawn Boy, 8111 Lyndale Avenue South, Bloomington, Minnesota 55420, 800-526-6937.

Scythes of Relief

All from either Husqvarna Forest and Garden Co. (9006 Perimeter Woods Dr., Charlotte, NC 28216, 800-438-7297) or Echo Inc. (400 Oakwood Rd., Lake Zurich, IL 60047, 800-432-3246)

1. Four-point brush blade for woody brush, Husqvarna. 2. Eight-in. fine-tooth brush blade, Echo. 3. Three-point plastic blade for heavy grass, Echo. 4. Maxi-saw 25-tooth steel blade for saplings, Husqvarna. 5. Three-point steel brush blade for heavy brush, Husqvarna.

What's My Line?

Dual-Fire .080 in. double-edged line, Cross-Fire .080-in. edged line, professional line .065 in. and .130 in., all from Echo Inc., 400 Oakwood Rd., Lake Zurich, IL 60047, 800-432-3246.

Homelite .080-in. individual strands Homelite Inc., 14401 Carowinds Blvd., Box 7047, Charlotte, NC 28241, 800 242-4672. Weed Whip line, Weed Whip International, Box 456, Venice, FL 34284, 800-536-9222.

Happening Hubs

1. Echomatic II, .095-in.-diameter double line, 2. fixed-line metal, .095-in. diameter, 3. Echomatic, .080-in. single line, 4. Echomatic trimmer head, 5. Pro-Maxi-cut weed cutter; all from Echo Inc., 400 Oakwood Rd., Lake Zurich, IL 60047, 800-432-3246. 6. Weed whip fixed-line, Weed Whip International, Box 456, Venice, FL 34284, 800-536-9222.

Our thanks to: Lubanko Tool Co. Inc., 38-25 Greenpoint Ave., Long Island City, NY 11101, 718-786-3237.

STONE IN A SACK
pp. 45-50

Mortar Mix: Sakrete, American Stone-Mix, 8320 Bellona Ave., Towson, MD 21204-2086, 800-445-8250.

Self-leveling concrete: B-1 Leveller, Bonsel, Box 241148, Charlotte, NC 28224-1148, 800-738-1621.

High-early strength concrete: Quikcrete 5000, 2987 Clairmont Rd., Suite 500, Atlanta, GA 30329

Sand mix. Sakrete.

Self-bonding concrete: Amstone

White portland cement. TXI, 1341 W. Mockingbird La., Dallas, TX 75247, 888-773-2894.

Anchor cement. Bonsal.

Instant hydraulic: Bonsal.

Fast-setting: Quikrete.

Adobe: TXI.

Fiber-reinforced Quikrete Concrete mix: Bonsal Sure-Mix

Colors: Quikrete, cement color (brown, charcoal, buff and red), LM Scofield Co., 6533 T Bandini Blvd., Los Angeles, CA 90040-3129, 213-720-3000

Silo cement. Spec-Mix, 2025 Centre Point Blvd., Ste. 240, Mendota Heights, MN 55120, 612-688-8966

Foot-powered mixer: Odjob, Scepter Manufacturing Co., 170 Midwest Rd., Scarborough, Ontario M1P 3A9

Gas powered mixer: Batchmaker, Bonsal

Electric mixer: Porter-Cable, 4825 Hwy.

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2468, Jackson, TN 38302-2468; 901-668-8600

Hoe and bin: Goldblatt Trowel Trade Tools, Stanley Tools, 600 Myrtle, New Britain, CT 06050, 800-262-2161

For further information: Portland Cement Association, 5420 Old Orchard Rd., Skokie, IL 60077-1083, 847-966-8389

Further reading: *Cement and Concrete Reference Guide*.

MECHANICAL SCREWDRIVERS
pp. 53-55

1. Fast grip: Endeavor Tool Co., 320 Soundview Rd., Guilford, CT 06437, 203-453-1947

2. Twenty-two-piece ratcheting screwdriver: Thorsen Tool Co., 1801 Morgan St., Rockford IL 61102, 800-435-2931

3. Mister Ratchet: Latshaw, 11020 Ambassador Dr., Kansas City, MO 64153, 316-942-7266

4. Powerbuilt six-in-one: Alltrade, 1431 W. Via Plata St., Long Beach, CA 90810-1460, 800-423-3598

5. Yankee screwdriver, Stanley Tools, 600 Myrtle, New Britain, CT 05053, 800-225-5111

MEDIA BLITZ
pp. 57-62

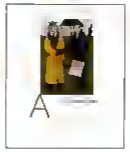
For information about media room installers, contact the Custom Electronics Design and Installation Association (CEDIA), 9202 N. Meridien, Ste. 200, Indianapolis, IN 46260, 800-669-5329, www.cedia.org.

Milton media room: Electronics by Sony, 800-222-7669.

Our thanks to: Steve Hayes, Custom Electronics, Falmouth, ME, 207-781-5998. Eric Borgstrom, Opus Audio/Video Interiors, New Haven, CT, 203-498-0407. Mike Hymes, Michael's Co., Van Nuys, CA, 818-782-8008. David Kroll, Media Systems, Bosroo, MA, 617-439-7004.

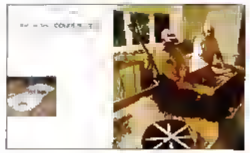
DIRECTORY

LET'S BREAK A DEAL
pp. 65-67



For more information on residential real-estate transactions and related personal financial advice, write for a free copy of the "Robert Bruss Real Estate Newsletter," 251 Park Rd., Burlingame, CA 94010. "Arbitration Rules for the Real Estate Industry" is available free from the American Arbitration Assoc., 140 W. 51st St., New York, NY 10020, 800-778-7879; www.adr.org. *Home Buying for Dummies* may also be of help. Eric Tyson and Ray Brown, 344 pp., IDG Books Worldwide, available at bookstores.

THE PERFECT COUNTERTOP?
pp. 74-80



Main story.

Concrete countertops: North Texas Bomanite Incorporated, 11107 Morrison Lane, Dallas, Texas 75229, 800-492-2524

Concrete bonder: Barnsco-Weld Concrete Bonder, 2609 Willowbrook, Dallas, Texas 75220, 214-352-9091

Sidebar:

Buddy Rhodes Studio, 2130 Oakdale Ave., San Francisco, CA 94124, 415-641-8070; www.buddyrhodes.com

Elementis Pigments Inc. (11 Executive Dr., Fairview Heights, IL 62208, 800-323-7796) sells 600-lb. drums of iron-oxide pigment for about $550 apiece.

Lehigh Portland Cement Co. (1980 Atlanta Ave., Riverside, CA 92507-2478, 909-683-7796) sells to contractors but can refer retailers, such as Home Depot, that sell its cement.

CAN A DISHWASHER BE WORTH $1,000?
pp. 83-88

Dishwasher disassembled: Bosch SHU 6805 UC, Bosch Home Appliances, 2800 S. 25th Ave., Broadview, IL 60153, 800-944-2904, www.boschappliances.com

Asko Inc., Box 851805, Richardson, TX 75085-1805, 800-367-2444, www.askousa.com.

Miele Appliances Inc., 22 D Worlds Fair Dr., Somerset, NJ 08873, 800-843-7231; www.mieleusa.com.

WHERE'S THE OOOO STUFF?
pp. 80-82

Base cabinet: Twenty-four in. wide, cherrywood, Crown Point Cabinetry, Box 1560, Claremont, New Hampshire 03743, 800-999-4994, www.crownpoint.com.

For more information: Contact the Kitchen Cabinet Manufacturers Association, 1899 Preston White Drive, Reston, Virginia 22091, 703-264-1690, fax 703-620-6530.

BOLO BASINS
pp. 94-95

All of the following basins and faucets are available nationwide from A.F. Supply Corp., 22 West 21st St., New York, NY 10010, 800-366-2284, 212-243-5400 (If no other manufacturer is listed, A.F. Supply is the only distributor in the United States)

Wall-mounted:

1. Basin: Globo CO-006/007, $1,395. (Faucet: Madison 20 700 360 06, $950, Dornbracht U.S.A., 1750 Breckenridge Pkwy., Ste. 510, Duluth, GA 30096, 800-774-1181.)

2. Basin: B. Pastorale 5242BPAST, $695, Geo. Martel from Cristal et Bronze, Ste. A, 1220 Liberty Way, Vista, CA 92083, 888-222-6427. (Faucets: 6153LNA, $275 per pair, Pegler Ltd., Box 111547, Carrollton, TX 75011-1547, 972-242-6105.)

3. Basin: Alape drum sink RS377, black and white, $950. (Faucet: Zazzeri 1100, polished chrome-graphite, $575.)

4. Basin: Philippe Starck 040557 00, white with siphon (drainpipe) cover 086352 00, $1,240, Duravit, 1750 Breckenridge Pkwy., Suite 500, Duluth, GA 30096, 800-774-1181. (Faucet: Tara Classic 33 500 880 00 with lever, 11 170 880 00, $640, Dornbracht U.S.A.)

5. Basin: Pozzi-Ginori Coralia-60, 35043, $575. (Faucet: Mega 209210123, Royal Brass, $950, Hansa America, 1432 W. 21st St., Chicago, IL 60608, 800-343-

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4431)
6 Basin Belle Epoque Console Lavatory 081166, $2,175, Cesame from Aquaware America Inc , 1 Selleck St , Norwalk, CT 06855, 800 527-4498 (Faucet Bontoche 25046, polished brass, $1,095, Cristal et Bronze.)
Pedestal.
1 Basin Petit Femina 1618/1758, $395, Porcher Inc., 6615 W Boston St., Chandler, AZ 85226, 800-359-3261. (Faucet 2000 series, $505, polished chrome and gold, Pegler Ltd , Box 111547, Carrolton, TX 75011, 972-242 6105)
2. Basin Vito Bagnella 03404900 with pedestal 00300000, $3,630 including Tara faucet 00300401000, Duravit
3. Basin Fontana 5893-011, $4,350. (Faucet Vogue 837/011/100, $735, Jado U S A , 7845 E Paradise La , Scottsdale, AZ 85260, 800-227 2734)
4. Basin Philippe Starck 040900.00.08, $4,295, Duravit. (Faucet. Philippe Starck single-lever 10020, Hansgrohe Inc , 1465 Ventura Dr., Cumming, GA 30040; 800 334-0455.)
5. Basin Neo Classic V200, white, $440, Le Bijou Collection, 8150 N W. 64th St., Miami, FL 33166; 305-593-6144 (Faucet Reminisce 1100 L CP, Mico Ltd , 1432 W 21st St , Chicago, IL 60608, 312-243-0770, 888-310-7878.)
6 Basin Revolution Cesame with leg stand 999915-C, $1,475, Aquaware America Inc. (Faucet Obma 33.500 540.00 with 11 174 540 00 handle, $935, Dornbracht)
Counter-mounted.
1. Belle Epoque Grande 10050 00.901, polished gold, $900, American Chinaware, 6615 W Boston St , Chandler, AZ 85226, 800-359 3261
2. Pozzi Ginoti E M I 19096 center-mounted, $450 (Faucet. Gessi Era 2005, polished chrome, $740)
3. Riatta, nickle silver, $850, Bates & Bates, 3699 Industry Ave., Lakewood, CA 90712, 800-726-7680.
4. Diva D8017, $395.
5. Pitti S-1103, $395, Le Bijou Collection
6. Architect Series round, 0468400000, $465, Duravit.

Further reading. For more ideas on bathroom design, see *This Old House Bathrooms* by Steve Thomas and Philip Langdon, Little Brown, 1993, $24.95. Available in bookstores and public libraries nationwide
For further information. The National Kitchen and Bath Association's Web site (www.nkba.org) features the homeowner quiz "How Good is your Kitchen or Bath?" to help consumers assess their remodeling needs and desires. Also of help: The pamphlet "The Little Book of Kitchen and Bath Wisdom" is available free of charge—via the Web site—to visitors responding to the quiz. Or for $5, home owners can order "The Dream Kitchen and Bath Planning Kit," which includes the pamphlet as well as a list of N.K.B.A. remodelers and manufacturers specific to their geographic area. Call 800-402-6522 to order the "The Dream Kitchen and Bath Planning Kit"; unless requested, the association will not give out home owners' names to its member remodelers.

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JURASSIC LARK
pp. 97-103

Contractor: Joe Ferrante, Ferrante Tile, 9 Charlemont Rd , Medford, MA 02155, 781-396 6327.
Cement board: Durock 4-by-8-in. sheets, 7/16-in. thick, U.S.G. (U.S. Gypsum) Corp., Lake St , Gypsum, OH 43433, 800-874-4968, www.usg.com
Cement board screws: Durock twin thread, 2½ in , U.S.G. Corp.
Hydroment medium-bed mortar, thin-set mortar and liquid latex admixture: Bostik, 211 Boston St., Middleton, MA 01949, 800-726-7845.
Limestone. 12-by-12-by-¾-in. tiles (blue and beige), $12 per sq. ft , Roma Tile, Watertown, MA 02172, 617-926-7662. Blue ¾-in. slab for curb, seat and shelf, Shep Brown Associates, 24 Cummings Park, Woburn, MA 01801, 781-935-8080.
Ceramic wainscot tile: Georgian border, $20 per 6-by-2-in. tile and Running Leaf border, $20 per 6 by 3-in. tile, Ann Sacks Tile & Stone (Kohler Co.), 8120 N.E. 33rd Dr., Portland, OR 97211, 800 278-8453, distributed by Roma Tile.
Samples of stones on page 100 listed as shown in the picture clockwise from top right:
India. Mystique green natural-cleft limestone, $3.99 per sq. ft , M.S. International Inc., 1335 Allec St , Anaheim, CA 92805, 800-347 9213
Minnesota: Cream fleuri, polished (price varies according to specific use), Mankato-Kasota Stone Inc , 818 N. Willow St , Box 1358, Mankato, MN 56002, 507-625-2746
Turkey 1. Sari travertine, polished and filled $10-15 per sq. ft , Akdo Intertrade Inc , 675 E. Washington Ave., Bridgeport, CT 06608, 203 336-5199.
Turkey 2: Brandy travertine, honed and unfilled, $9-12 per sq. ft , Akdo Intertrade Inc.
Texas: Texas Shellstone, saw-cut, 12-by-12-in. tiles, Marble and Granite Resources Inc , 2117 Sam's Dr , Des Peres, MO 63131, 314 966-4747.
Germany: Natural-cleft Solnhofen, 12-by-12-in. tiles, $20 per sq. ft., available as flagstone, $5-10 per sq. ft., Jurassic Stone Co , 10115 Residency Rd , Manassas, VA 20110, 703-331-1454.
Turkey 3: Alkan travertine, honed and filled, $10-15 per sq. ft., Akdo Intertrade Inc.
(Center of picture) **Ecuador/Brazil:** Dorado unfilled travertine, $6.09 per sq. ft , M.S. International Inc.

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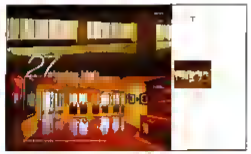
COVERED BRIDGE TO THE PAST
pp. 110-117

The National Society for the Preservation of Covered Bridges can be contacted at Box 910, Westminster, Vermont 05158.

802 722 4040 Unofficially founded half a century ago and made official in 1956, the society has been instrumental in saving many covered bridges, mostly in the United States; recently the group has also aided with efforts to save bridges in Quebec. Its publications include the 1989 243 page *World Guide to Covered Bridges*, which lists such information as the location, age and name of all known remaining covered bridges in the world, available for $8.50 by calling the society A new, illustrated guide will become available in late 1998 or early 1999 The quarterly publications *Topics* and the *Newsletter* are included in membership to the National Society for the Preservation of Covered Bridges, $15 a year (Sightseers might be interested to know that Pennsylvania, with 221, has more covered bridges than any other state; second is Ohio with 140, third, Vermont with 99

Arnold M. Graton Associates, Restoration Conservationist, operates out of Ashland, New Hampshire; 603 968 3621

T.O.H., 27 STORIES HIGH
pp. 118-123



Daniel Rowen Architects, 448 W 37th St , Loft 12 B, New York, NY 10018, 212-947-9109

Jonas Milder Systems and Furniture, 540 Metropolitan Ave , Brooklyn, NY 11211, 718 387 0767, jonas@dti.net

Goodwin Heart Pine, 106 SW 109th Place, Micanopy, FL 32667, 800-336 3118

Doors Weather Shield, 1 Weather Shield Plaza, Box 309, Medford, WI 54451, 800 477-6808

Hardware: Baldwin, 800 566-1986

Pantry cabinets: Aristocraft, 812-482-2527, www.aristokraft.com

Appliances: Kitchen Aid, 2303 Pipestone Rd , Mail Drop 0120, Benton Harbor, MI 49022, 800-422-1230, www.kitchenaid.com

Conference room tables: Made by David Johnson, available at Knock on Wood, 355 Post Rd , Darien, CT 06820, 203 655 9031

Conference room chairs: Made by Windsor Workshop, available at Knock on Wood.

Contractor: McCann Inc , 212-586 8000.

Project manager: Mike Goldberg

THE BEST LAWN
pp. 124-131

Organic lawn-care services: Clifford Maske, Maske's Organic Gardening, Box 3135, Decatur, Illinois 62524, 217-429-1980; Michael Talbot and Associates, 4 Centervale Park, Boston, Massachusetts 02124, 617-436 2338

Organic fertilizer, biological controls, corn gluten meal: Paul D Sachs, North Country Organics, Depot Street, Bradford, Vermont 05033, 802 222-4277, fax 802-222 9661; www.norganics.com, E mail nco@conntiver.net Gardens Alive, 5100 Schenley Place, Lawrenceburg, Indiana 47025, 812-537-8650, fax 812 537-5108

Additional source for corn gluten meal: Safe 'N' Simple, Blue Seal Feeds Incorporated, Box 8000, Londonderry, New Hampshire 03053-8000, 603-437-3400, fax 603-437-3403; to obtain more Blue Seal dealer information, call 800-367-2730.

Troubleshooting. "Picture Clues to Turfgrass Problems," a pocket-sized guide that is published by Cornell Cooperative Extension, 40pp , $7.25, Resource Center, Cornell University, 7 Business and Technology Park, Ithaca, New York 14850; 607 255 2080 A nifty guide for identifying many different lawn pests can easily be located on the Web site www.ianr.unl.edu/pubs/insects/index.htm

Information on pesticides and alternatives: National Coalition Against the Misuse of Pesticides, 701 E Street, S E., Suite 200, Washington, DC, 202-543 5450 The Environmental Protection Agency maintains a pesticide hot line for home owners (800-858-7378) and a question-and-answer page on lawn pesticides on the Web found at http://pmep.cce.cornell.edu/issues/lawns-sues.html

Information on water quality. The United States Geological Survey maintains a Web site with state-by-state reports on water quality (http://h2o.usgs)

Studies cited in the article: "Case-Control Study of Canine Malignant Lymphoma Positive Association With Dog Owner's Use of 2,4-Dichlorophenoxyacetic Acid Herbicides" written by Howard M Hayes et al , *Journal of the National Cancer Institute*, Volume 83, Number 17, pp 126 131, September 4, 1991.

"Home Pesticide Use and Childhood Cancer: A Case-Control Study" by Jack K Leiss and David A Savitz, *American Journal of Public Health*, Volume 85, Number 2, pp 249 252, February 1995.

Further reading.

The Chemical Free Lawn by Warren Schultz, 1996, 194 pp , $14.95, Rodale Press Inc , 33 East Minot Street, Emmaus, Pennsylvania 18098-0099, 610-967 5171, fax 610-967-8963; www.rodalepress.com

Handbook of Successful Ecological Lawn Care by Paul D. Sachs, 1996, 284 pp , $18.95 plus $1.75 shipping, Edaphic Press, Box 107, Newbury, Vermont 05051, 802-222-4277

Common-Sense Pest Control. Least Toxic Solutions for Your Home, Garden, Pets and Community by William Olkowski, Sheila Daar and Helga Olkowski, 1991, 715 pp , $39 95, Tauntan Press, 63 South Main Street, Box 5506, Newtown, Connecticut 06470 5506; 800 283 7252, www.taunton.com. Most of this book's information specific to lawns is also available to readers in the pamplet "Least-Toxic Pest Management for Lawns" edited by Sheila Daar, 74 pp , $12 plus $2.50 shipping, Bio-Integral Resource Center, Box 7414, Berkeley, California 94707, 510-524 2567, fax

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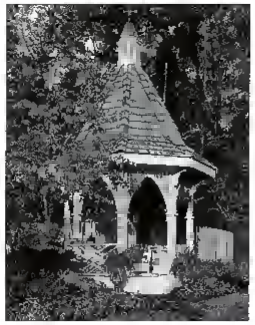

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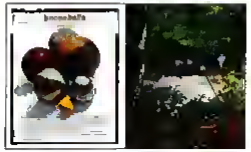
510-524-1758.
"Organic Lawn Care" by the North Carolina Cooperative Extension Service, 32 pp , $4, Department of Agricultural Communications, Campus Box 7603, North Carolina State University, Raleigh, North Carolina 27695-7603, 919-515-2813
Our thanks to: Ron Boylan, O.M. Scott & Sons Co., Marysville, OH

STONE CARVER
pp. 132-137

For information about Manuel Palos's work, write to Manuel Palos Sculpture Inc , 1330 Donner Ave , San Francisco, CA 94124, 415-822-8034, fax 415-822-9280
Our thanks to: Michael Shannon and Nicolas Cage

BOCCE BELLA
pp. 138-143



Materials:
1. Ten pieces of 2-by-12 pressure-treated pine for the frame, purchased 16 ft. long and trimmed as needed.
2. Six pressure-treated 2-by-4s for cross bracing.
3. One sheet of ⅝-in. pressure-treated plywood to make the cleats.
4. Five 10-ft. lengths of ¾-in. galvanized pipe cut into 2-ft. pieces
5. Sixty pipe clamps
6. Galvanized screws (1⅝ in. for cleats, 1¼ in. for pipe clamps, three inches for corners)
7. Four tons of stone dust spread 4 inches deep.
Contractors: Dellatto Construction, 24 Marie Drive, Andover, Massachusetts 01810, 978-475-5306. Wildwood Excavation Incorporated, 233 Holt Road, Andover, Massachusetts 01810, 978-474-8088
Bocce balls, clockwise from top of photograph on p. 138: Italian confetti from four-ball world champion set, $99, Rico Daniele's Wonderful World of Bocce, 839 Main Street, Springfield, Massachusetts 01103; 800-262-2354, www.sites2c.com/bocce.
Ivory-dotted from four-ball antique bowls set, $600, Burke's Antiques, 1030 Lexington Ave., New York, NY 10021; 212-570-2964.
Pétanque from three-ball Obut Match Three II set, $159.95, Wonderful World of Bocce.
Pallino from eight-ball Contender set, $108, Sportcraft Co. Ltd., International Trade Center, 313 Waterloo Valley Road, Mount Olive, New Jersey 07828; 973-347-3800
Brass from two-ball Boule du Jour set, $119, Wonderful World of Bocce.
Red plastic from eight-ball Perfetta Professional set, $99, Wonderful World of Bocce.
Measuring tools: Telescoping caliper, $10, combination measure and scorekeeper, $18.95, folding rule, $12.99; all from Wonderful World of Bocce.
Further reading: *Bocce. A Sport for Everyone* by Rico Daniele, 167 pp , $9.95, Wonderful World of Bocce. *The Joy of Bocce* by Mario Pagnoni, 109 pp , $12.95, Masters Press, 2647 Waterford Parkway E. Drive, Suite 300, Indianapolis, Indiana 46214, 800-977-6787
Further information: United States Bocce Federation, 920 Harbor View Dr., Martinez, CA 94553-2762, 510-229-2157.
Links to numerous bocce Web sites can be found at http://pw1.netcom.com/~bmero/bocce.html.

PARK PLACE
pp. 144-149

Contractor for the project: Dan Plummer Construction, 160 Delmar Steet, San Francisco, California 94117, 415-313-2236
Excavation and paving: Annuzzi's General Engineering, 85 Elmira Street, San Francisco, California 94124; 415-468-2795
Stairs and foundation: Under Construction, Box 403, Larkspur, CA 94977, 415-924-5444.
Garage-door maker: Garage Doors Incorporated, 190 Martha Street, Unit 104, San Jose, California 95112, 408-293-7443.
Garage-door installer: Garage Master, 1459 24th Avenue, San Francisco, California 94122, 415-759-8094

PLAYHOUSES
pp. 150-155

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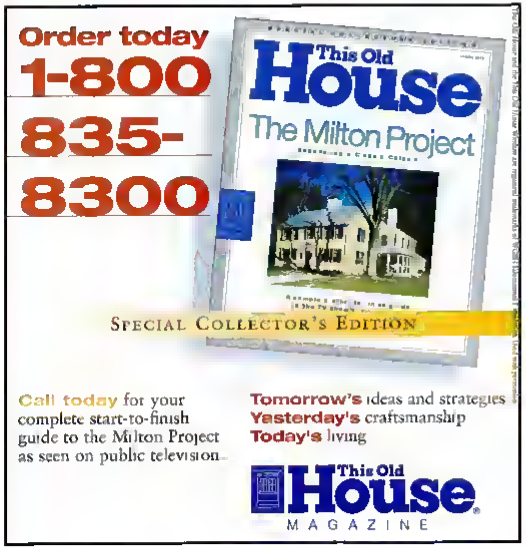

DIRECTORY

The New Yankee Workshop Kids' Stuff (Little, Brown and Company, 184 pp., $19.95) contains measured drawings and step-by-step building instructions for the playhouse as well as eight other projects. Videotape and measured drawing, priced at $39.95, or measured drawing only, priced at $15, also available from the New Yankee Workshop, Box 9345, South Burlington, Vermont 05407-9345, 800-892-0110.

Historical playhouses: The Atlanta History Center is located at 130 West Paces Ferry Road, Atlanta, Georgia 30305, 404-814-4000. The Ellwood House Museum is located at 509 North First Street, DeKalb, Illinois 60115, 815 756-4609.

THE POSTER: PVC PIPE AND FITTINGS

pp. 157-158

PVC pipe, fittings and sealants manufactured by the companies listed below are available at plumbing supply distributors, home centers and hardware stores across the country.

Pipe and fittings manufacturers:
NIBCO Incorporated, 5250 W. 76th Street, Indianapolis, Indiana 46268, 800-642-2699.
Dura Plastic Products Incorporated, Box 2097, Beaumont, California 92223-1041, 509-845-3161.
Harrington Industrial Plastics Incorporated, 7557 Convoy Court, San Diego, California 92111; 619 278 9311
P.W. Pipe, 1550 Valley River Drive, Eugene, Oregon 97401, 800 347 0200.
Mail-order source for flexible PVC pipe as well as PVC fittings and valves.
Aquatic Eco-Systems Inc., 1767 Benbow Court, Apopka, Florida 32703, 800-422-3939, Web site www.aquaneco.com.
Primers and solvent cements: IPS Corp., 455 West Victoria Street, Compton, California, 800-421-2677; www.ipscorp.com. Oatey, 4700 West 160th Street, Cleveland, Ohio 44135; 800-321-9532.
PVC pipe cutters and trimmers for PVC pipe:
Pipe saw: Carbon steel, 10-2201, $16.99, Takagi Tools, 337 A Figueroa Street, Wilmington, California 90744, 800-891-7855.
Ratcheting cutter: VP-30, $43, Five Star Distributing, 16107 Piuma Avenue, Cerritos, California 90703, 562 403-3848.
Deburring cone: DEB-2, $14.45, Reed Manufacturing Company, Box 1321, Erie, Pennsylvania 16512, 800-666-3691.
Edge bevel: DEB-4, $48.20, Reed Manufacturing Company, Box 1321, Erie, Pennsylvania 16512, 800-666-3691.
Steel wire saw: PS500, $4.50, American Trade Products Incorporated, Smyrna, Georgia 30082, 800-368-1564.
Our thanks to:
Colin Crain, Harrington Industrial Plastics Incorporated, San Diego, California.
Darlene Jerome, plant manager, and Dann Johnson, both at P.W. Pipe, Perris, California.
John Houle, market development engineer, P.W. Pipe, Eugene, Oregon.
Kevin L. Rost, president, and Cindy Garcia, both at Dura Plastic Products, Beaumont, California.
Larry Strauser, vice president, and George Blanco, safety manager, both at IPS Corporation, Compton, California.
Jeff Carowitz, marketing manager, Hunter Industries, San Marcos, California.
Michael McCarter, president, Tekton Master Builders, Encinitas, California.
Aaron Lotts, Hydro Scape Products Incorporated, Encinitas, California.

For additional information on PVC pipe or plumbing/sanitation systems:
Plastics Pipe Institute (PPI), a division of the Society of the Plastics Industry Incorporated, 1801 K Street, N.W., Suite 600K, Washington, DC 20006, 202-974-5200.
Any home owner installing a plumbing system may want to contact the **National Sanitation Foundation** (now called N.S.F. International), 3475 Plymouth Road, Ann Arbor, Michigan 48105, 313-769-8010 (the area code will change to 734 in July 1998; the organization also has offices in Washington, D.C., Sacramento, Nairobi, Brussels and Sydney). The mission of this not-for-profit group is to protect public health by developing standards and testing and certifying sanitation products. To check whether a sanitation product or manufacturer is certified, visit the "certified products data base" at the Web site www.nsf.org. Home owners without access to the Internet can order the *Drinking Water Consumer Products Book*, which includes information on certified plumbing and sanitation systems and their claims, available for $6 shipping and handling by calling 800 673-8010. Consumers purchasing PVC pipe should check for the round or rectangular-shaped National Sanitation Foundation (N.S.F.) certification mark. If the pipe has no certification mark, consumers should report it to N.S.F. via its Web site www.nsf.org, or by calling 800-673-6275 and asking for the plastic piping department.

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ASK NORM

pp. 159-160

Metal detecting scanners: Garrett Metal Detectors, 1881 W. State St., Garland, TX 750042, 972-494 6151, www.detection.com/garrett.
Stain-polyurethane: Minwax Polyshades, 800 523-9299, www.minwax.com.

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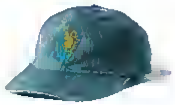

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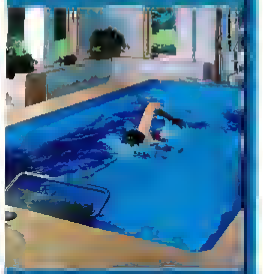

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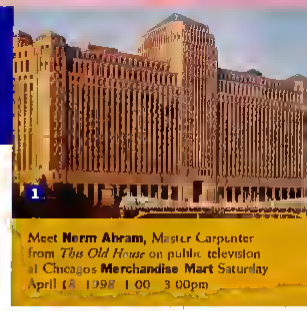

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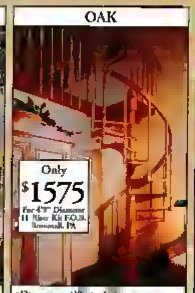

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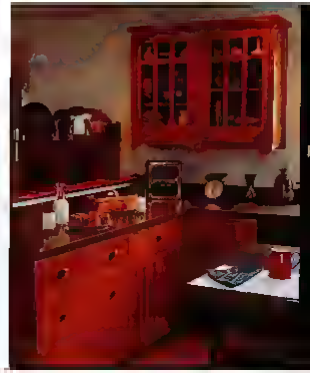

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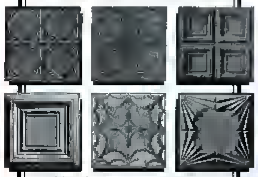

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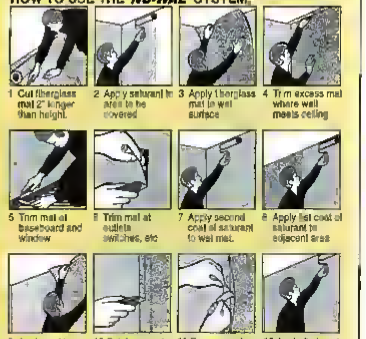

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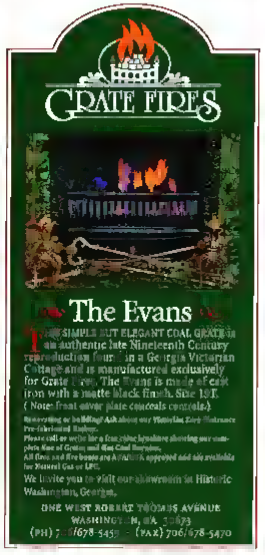
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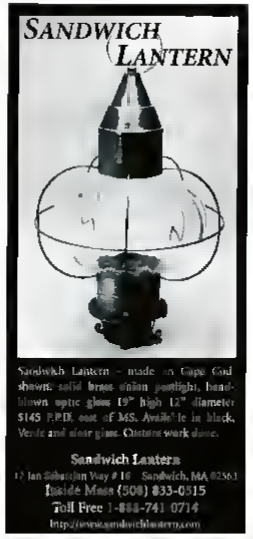
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One hundred fifty years later, Algona isn't quite the City of Light, but the town of 6,000 has three *Fortune* 500 employers, its grocery stores stock French bread and Brie, and the stars at night shine like a distant city.

No one is sure whether Call or any of his descendants built the Italianate house at 707 East North Street. The last owner to live there was Rose Hurig Scanlan, a bookkeeper. After she died in 1986, St. Cecelia Catholic Church bought the house for $14,000 because it was inexpensive—and next door. For a few years, renters lived there. Then the church decided to use the lot for a playground instead and considered an offer of $3,000 to buy and move the house. The deal fell through. Now the house may be razed if a buyer isn't found.

"It's a beautiful little old house," says Bill Farnham, president of the Kossuth County Historical Society. A typical lot in Algona, a county-seat town enveloped by some of the richest farmland in the world, sells for $10,000. Moving the house would add about $10,000 to the cost.

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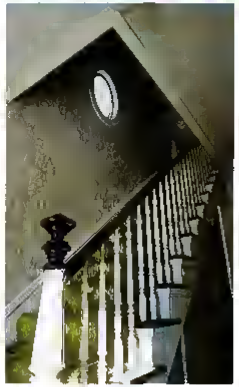

The 1,800-square-foot house, built in the early 1900s, is in good repair. Vinyl siding covers most of the exterior, but Italianate roof brackets peek out at the eaves. Previous occupants never attempted to modernize the interior. A bull's-eye window lights up the stairwell with its newel post. Colored glass sparkles in the spacious living room.

PHOTOGRAPHS BY DAVE THOMPSON

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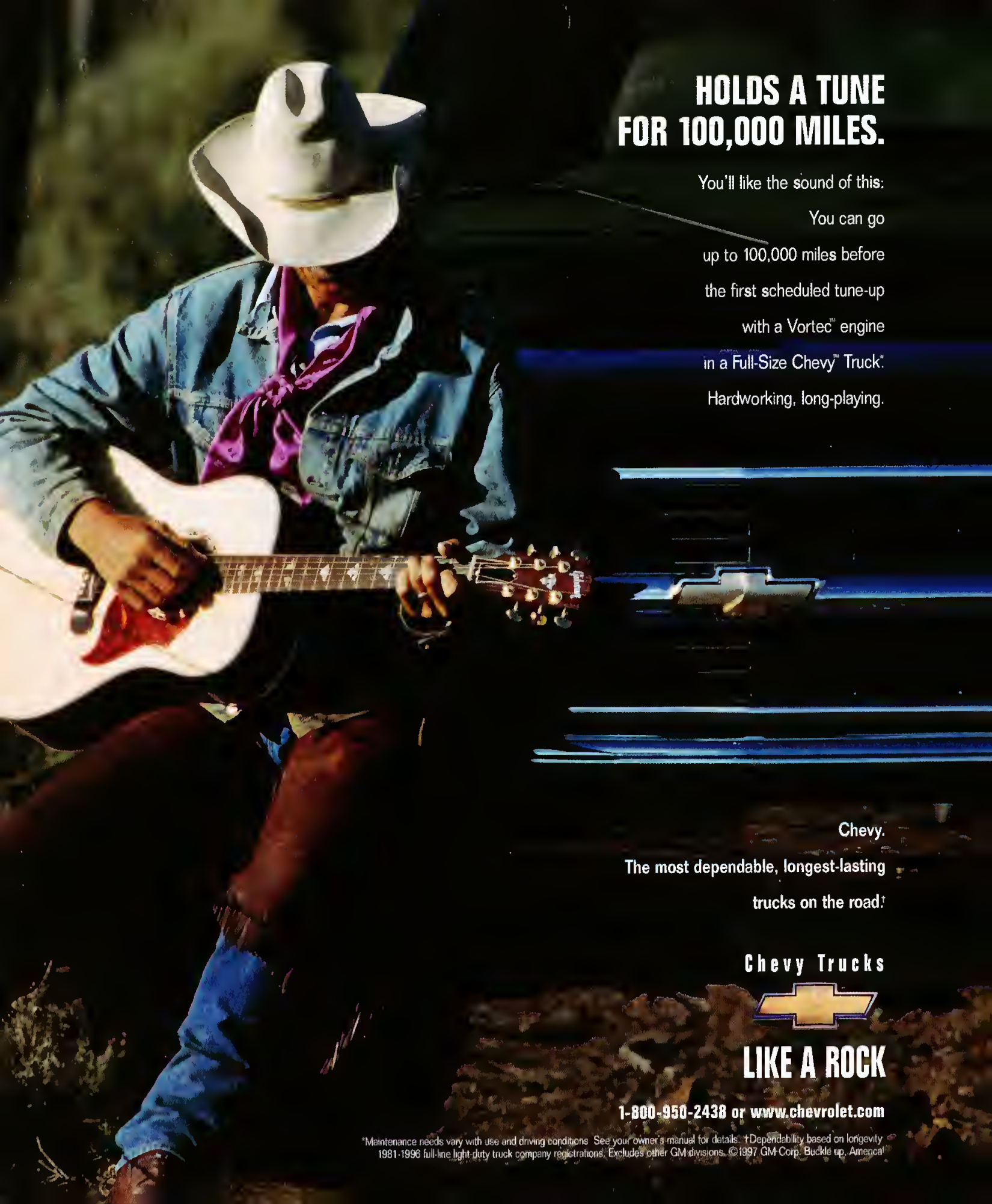

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